REPORT

Phase Two Environmental Site Assessment

Wateridge Village Phase 4, Part of 1076 Hemlock Private, Ottawa, Ontario

Submitted to:

Canada Lands Company
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Submitted by:

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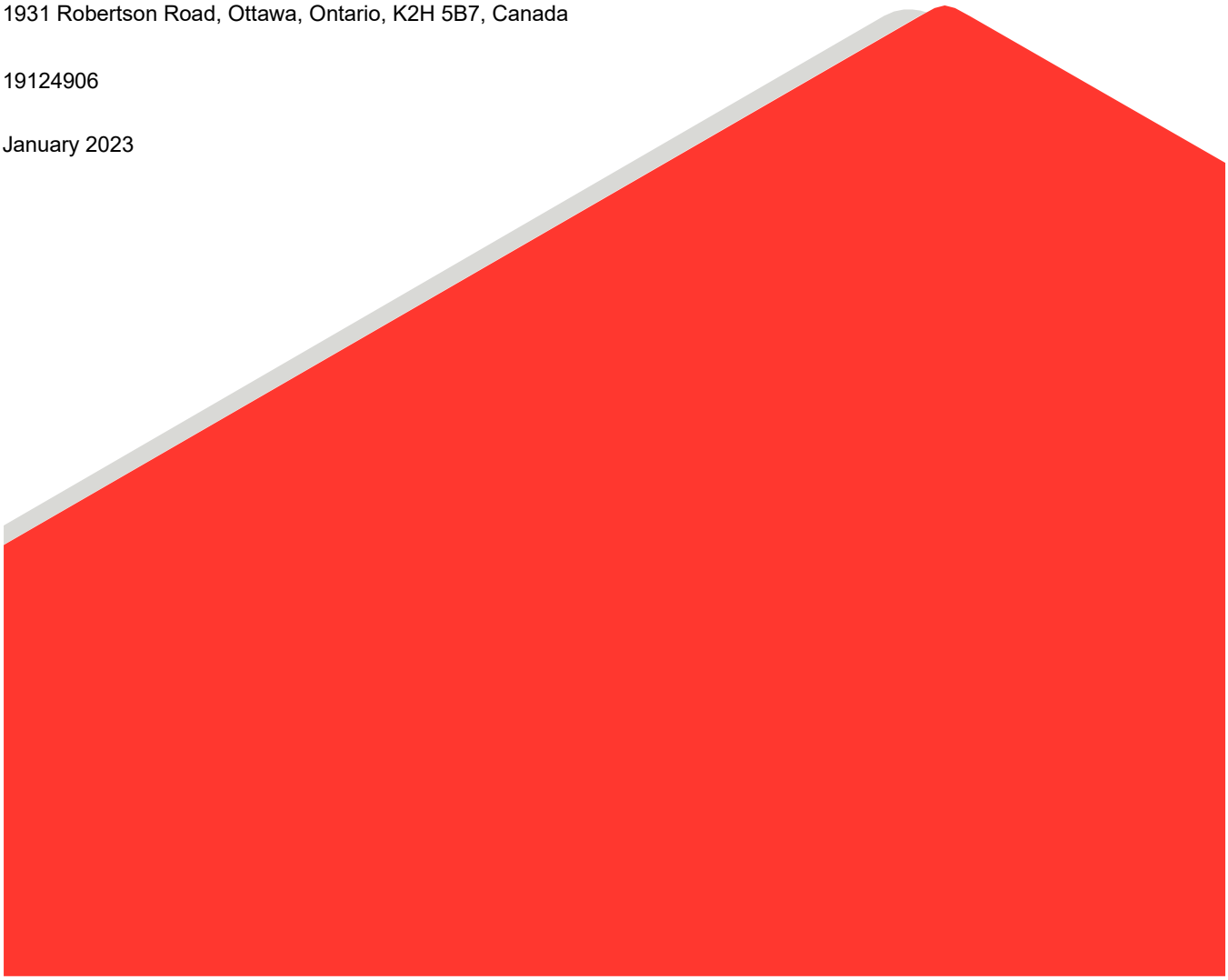
January 2023



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1.0 EXECUTIVE SUMMARY

WSP Canada Inc. (formerly Golder Associates Ltd. (“Golder”) and hereafter referred to as “WSP”) was retained by Canada Lands Company (CLC) to conduct a Phase Two Environmental Site Assessment (ESA) of part of the former Canadian Forces Base (CFB) Rockcliffe (the “Site” or the “Phase Two Property”) in Ottawa, Ontario, specifically Phase 4, in the central part of the former base. The location of the Phase Two Property is provided in Figure 1.

WSP conducted a Phase One ESA in support of the Record of Site Condition (RSC) Property in June 2022 and based on the available information reviewed, it was identified that several areas of the Phase One ESA Property were underlain by fill and that historical investigation had identified three locations with documented exceedances in the fill, attributed to demolition of the near by former buildings. Although these impacts were reported to have been remediated in 2014 and 2015, for the purpose of the Phase One ESA, fill was retained as a potentially contaminating activity resulting in an Area of Potential Environmental Concern (APEC) across the Site. The findings of the historical Phase Two ESA and remediation have been incorporated into the current Phase Two ESA, as discussed below. A second APEC was identified as the potential for groundwater impacts from former fuel storage tanks associated with the swimming pool operation in former Building 137, located off-Site to the north of the central portion of the Site. This APEC was also remediated in 2014/15 but due to the documented residual groundwater contamination located off-Site, it was retained as resulting in an APEC on the RSC Property.

As such, the Phase One ESA for the RSC Property identified following two APECs:

- APEC 1: Potential for subsurface impacts resulting from the presence of poor quality of fill including building demolition materials across the Site.
- APEC 2: Potential for groundwater impacts on the Site from former off-Site fuel storage tanks and associated known off-Site groundwater contamination.

For context, the RSC Property was initially assessed as federal land along with the remainder of the CFB Rockcliffe as far back as the 1990s through a series of investigations cumulating in remediation work undertaken in 2014 and 2015, including portions of the RSC property. WSP has reviewed the previous investigations and remedial work in comparison to the current Site Condition Standards and regulatory regime and has incorporated the historical data that was considered by the QP as reliable for use in the Phase Two ESA.

A historical Phase Two ESA was completed by others for the RSC Property and surrounding lands of the CFB Rockcliffe. The investigation identified fill quality related impacts (APEC 1) in the area with former buildings and structures on the RSC Property, where two samples (TP61 SGS1 and TP62 SGS1) indicated concentrations of PHCs and/or PAHs above the applicable site conditions standards in soil. In addition, two soil samples located off-Site (TP31 and BHMW15) also had exceedances of metals (TP31) and PHCs and PAHs (BHMW15), respectively. These off-Site soil impacts were subsequently remediated with the remediations extending onto the RSC property. PHC and PAH impacts were also identified in groundwater at BHMW15 (located north of the central portion of the RSC Property). Off-Site groundwater remediation was completed, however, residual PHC impacts were documented following the remedial activities at the southern limit of remedial excavation (MW137-3). These impacts were delineated off-Site to the north of the RSC Property during the Phase Two ESA completed in July 2020.

WSP completed a Phase Two ESA in accordance with O. Reg.153/04 (as amended) at the Site in three stages to investigate the APECs identified in the Phase One ESA. The initial stage consisted of a test pit program to

evaluate fill quality at the RSC Property and surrounding lands, completed in July 2020. Seven of the test pits (TP4-01, TP4-02, TP4-10, TP4-12, TP4-13, TP4-15, TP4-16) completed were located on the RSC Property. The next stage of the investigation, conducted in July 2020, was a drilling program where five boreholes with monitoring wells were completed on the RSC Property to evaluate both the fill quality of APEC 1 and the groundwater quality within the APEC 2, positioned around the off-Site potential contaminating activity (PCA). Two of these boreholes identified soil impacts within the fill layer near / in a recently constructed storm sewer trench that crosses the RSC Property. These impacts were subsequently delineated in a third stage of investigation which included a test pitting program completed in October 2022 consisting of seven test pits (TP22-01 to TP22-07). Details of this test pit program and borehole investigation relevant to the RSC Property have been included in the Phase Two ESA Report.

Three small localized remediations were completed at the RSC Property between September 2014 and January 2015 to remove impacted soil (identified in investigations completed by others which have been incorporated in the Phase Two ESA report) from the Site followed by confirmatory sampling. In addition, a soil and groundwater remediation for the exceedance in BHMW15 (associated with former fuel storage tanks around former Building 137) was completed off-Site with a portion of the remedial soil excavation extending on to the RSC Property which was validated by clean sample. The sampling methodology and analytical data from these remediations which are relevant to the RSC Property have been discussed in the Remediation Report (Appendix G from the Phase Two ESA report). The remediation for soil impacts identified in the Phase Two ESA was completed between October and December 2022. This remediation work, completed with full time supervision by a WSP staff, included removal of all impacted soil (4,630 m^3) from the RSC Property, collection and analysis of confirmatory samples, and backfilling of the excavation.

Based on the results of the soil (APEC 1 - fill) and groundwater (APEC 2 – off-site PHC and PAH exceedances in groundwater) samples submitted as part of this Phase Two ESA and following remediation, the reported concentrations of the contaminants of potential concern were below the applicable site condition standards as of the certification date (December 14, 2022). No risk assessment or remediation is required prior to the submission of an RSC.

2.0 INTRODUCTION

2.1 Site Description

WSP Canada Ltd. (formerly Golder Associates Ltd. at the time of the investigation), hereafter referred to as WSP, was retained by CLC to conduct a Phase Two ESA of the following property:

Table A: RSC Property Information

Municipal Address	Part of 1076 Hemlock Private, Ottawa, Ontario (formerly part of 335 St. Laurent Boulevard)
Property Identification Number	Part of PIN 04273-1205 (LT)
Legal Description	Part of Lots 23 and 24, Concession 1 (Ottawa Front), Geographic Township of Gloucester, City of Ottawa
Size of the Phase Two Property	4.89 hectares

The location of the RSC Property is provided in Figure 1. A plan of survey for the Site is provided in Appendix A. The boundaries of the Site, which are the same as the RSC property boundaries, are provided in Figure 1.

2.2 Property Ownership

The contact information for the Phase Two Property owner is as follows:

Table B: RSC Property Owner's Information

Owner: Canada Lands Company CLC Limited	100 Queen Street, Suite 1050 Ottawa, ON K1P 1J9	Katherine Constantine Office: (613) 564-3017 Email: kconstantine@clc.ca

2.3 Current and Proposed Future Uses

The Phase Two Property is currently vacant with no buildings. The proposed future use of the Phase Two Property is a residential subdivision. The most recent use on the property consisted of mixed land use including residential barracks, office buildings, ground telecom site and transmission tower.

2.4 Applicable Site Condition Standard

The analytical results of the samples collected for this Phase Two ESA were compared to the Table 1 Full Depth Background Site Condition standards (residential property use) presented in the MECP document "*Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*", dated April 15, 2011. The applicable site condition standards were selected based on the following rationale:

- The Phase Two Property and all other properties located, in whole or in part, within 250 metres of the Phase Two Property are supplied by the City of Ottawa municipal drinking water system. No wells were identified that are used or intended for use as a source of water.
- The Phase Two Property is not located in an area designated in a municipal official plan as a well-head protection area or other designation identified by the municipality for the protection of ground water.
- Based on field observations the native soil (silt and clays interbedded with sands and gravels) is considered to be a mixture of fine and coarse textured. As such coarse textured soils was selected for screening purpose.
- The average thickness of overburden at the Site is less than 2 metres below ground surface (mbgs). Hence, the RSC Property is considered a shallow soil property.
- The closest water body is the Ottawa River, located 950 metres (m") north of the Phase Two Property. There is also a stormwater pond 200 m northeast of the Site and associated stormwater ditches north of the Site. Stormwater pond and infrastructure (ditches) are not considered as water body under the Regulation and are therefore not considered in the selection of the standards.
- An area of natural significance was identified on or within 30m of the Site due to presence of bat habitat potentially used by endangered bat species (brown myotis) as well as documented butternut trees to the north and east of the Site. As such the RSC Property is considered an environmentally sensitive area.
- The pH of surface soil is $5 \leq pH \leq 9$ and the pH of sub-surface soil meets the requirement that $5 \leq pH \leq 11$.
- The intended use for the Phase Two Property is residential.

3.0 BACKGROUND INFORMATION

This section presents the background conditions of the Phase Two Property including a description of the physical setting and a summary of past investigations conducted.

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site, and to develop the information necessary to complete a Record of Site Condition (RSC) for the property. The objectives of this Phase Two ESA were achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Phase Two Property.
- Conducting field sampling for all contaminants of concern (COCs) associated with each APEC identified in the Phase One ESA.

The Sampling and Analysis Plan (Appendix A), Record of Test Pits (Appendix B), Record of Boreholes (Appendix C) and Laboratory Certificates (Appendix D) are appended to this report.

3.1 Physical Setting

The RSC Property consisted of a 4.89-hectare parcel of currently vacant land that consisted of a few old, paved roadways associated with the former CFB Rockcliffe military base. There were no structures currently present on the Site. Historically, the RSC Property was occupied by a series of buildings and structures associated with the former military base and were used for:

- Building 8: Office – Chaplain's office
- Building 9: Office – Special investigation department
- Building 10: Office – Eastern section investigation department
- Building 11: Ground telecom transmission site
- Building 70: Residential: Airwomens' barracks
- Building 71: Residential: NCO barracks
- Building 124: Office: ground training offices
- Building 126: transmission tower

The surrounding properties to the north, east and west are undeveloped and the properties to the south and southwest are under development for parkland and residential housing. Historically, the surrounding lands were also developed as part of the military activities associated with CFB Rockcliffe with buildings for commercial use including lounge (building 15), hospital (building 134), medical storage (building 176), other storage (buildings 178 and 179), and an indoor swimming pool (building 137).

An environmental impact statement completed to the east and northeast of the Phase Two Property, including a study area overlapping the east part of the Phase Two Property, identified presence of bat habitat potentially used by endangered bat species (brown myotis) as well as documented butternut trees to the north and east of the Site. As such the RSC Property is considered an environmentally sensitive area. The topography of the Phase Two Property and surrounding areas is generally uneven with an overall slope to the north. Beyond the north Site

limit there is a ridge with a steep slope to the north. The southern portion of the Site is generally at grade with the adjacent properties east and south.

3.2 Past Investigation

The following environmental reports related to the Site were provided to WSP and previously to Golder by CLC. Noteworthy findings are summarized below.

- "DST 2004 Steam Line Decommissioning and Remediation Plan". CFB Rockcliffe Underground Steam Line Decommissioning and Site Remediation Plan. Prepared by DST Consulting Engineers, dated December 2004.
- "DST 2015 Phase One ESA". Phase One Environmental Site Assessment, Former CFB Rockcliffe, Ottawa, Ontario. Prepared by DST Consulting Engineers for Canada Lands Company CLC Limited, dated May 2015.
- "DST 2015 Phase Two ESA". Phase Two Environmental Site Assessment Update, Former CFB Rockcliffe, Ottawa, Ontario. Prepared by DST Consulting Engineers for Canada Lands Company CLC Limited, dated May 2015.
- "DST 2016 Environmental Status Summary Letter." Environmental Status Summary Letter, May 2105, Soil and Groundwater Remediation, Former CFB Rockcliffe, Ottawa, Ontario. Prepared by DST Consulting Engineers for the City of Ottawa, dated May 11, 2016.
- "DST 2017 Soil and Groundwater Remediation Volume 1". Soil and Groundwater Remediation Volume 1, Former CFB Rockcliffe, Ottawa, Ontario. Prepared by DST Consulting Engineers for Canada Lands Company CLC Limited, dated September 2017.
- "Dillon 2019 Environmental Impact Statement". Wateridge Village Phase 2A and 2B, Environmental Impact Statement. Prepared by Dillon Consulting for Canada Lands Company, dated February 2019

3.2.1 DST 2004 Steam Line Decommissioning and Remediation Plan (figure)

This figure outlines the location of the steam distribution line throughout the base that was used to distribute steam heating from the central heating plant. The 2009 Phase II ESA makes a reference to testing completed from the fill along the steam line during its removal. In total there were nine samples of the twenty-five collected that were documented to exceed the provincial standards at that time and an additional three exceeding federal criteria. The parameters noted as exceedances are metals, PAHs, and PHCs. No details on the location of the exceedances were provided and as such all the fill through which the steam line passes are considered to be a PCA.

The steam line is present along the northern (north of former buildings 69, 70 and 71) and eastern side of the RSC Property boundary beside former Hurley Crescent. Additionally, the fill off-site is considered a PCA but is not considered to have resulted in an APEC to the RSC Property.

3.2.2 DST 2015 Phase One ESA

The 2015 Phase One ESA was done for the entire CFB Rockcliffe area including the RSC Property. In total the Phase One ESA identifies twenty-three (23) areas of environmental concern on the former base lands and two areas of concern associated with the off-site land uses for the Monfort Hospital and the National Research Council. The Montfort Hospital is outside the current RSC Study Area. The report indicates the property was first developed as a military base in 1937 and was previously owned by individual owners as either vacant land or part

of larger farmsteads. The site was occupied by a series of buildings throughout the operation of the base until being decommissioned and demolished prior to the completion of the Phase One ESA.

The following identified areas of concern are relevant to the RSC Property.

Petroleum hydrocarbon soil and groundwater impacts at the former swimming pool at building 137 associated with two former fuel storage tanks (one below and one above ground tank). Petroleum hydrocarbon impacts at the former communication building and transmitter tower at buildings 126 and 11 and metals impacts in fill in the northwest of the RSC Property (test pit TP31).

The report identified several off-Site PCAs within the study area including poor quality fill to the south and east, PHC remediations attributed to an automotive garage at Building 29 and possible fuel storage tanks at Building 22 as well as a fuel storage tank at Building 16 and Building 134. All off the off-site PCAs were subsequently remediated, with the exception of Building 134 to the west, and are therefore not considered as APECs to the RSC Property. Building 134 is 60 metres cross gradient to the RSC Property and the contamination was documented to be limited in extent and therefore is not considered to represent an APEC to the RSC Property.

3.2.3 DST 2015 Phase Two ESA

The above report provides an updated summary of the Phase II ESA completed in 2004 and 2007 and presented in the report entitled “Phase II Environmental Site Assessment, Lands Associated with the Remediation of Various Building Sites at Canadian Forces Base Rockcliffe. Prepared by DST Consulting Engineers for Canada Lands Company and Public Works and Government Services, dated April 2009”. As the report does not introduce any significant new data and is a repackaging of the pervious report including a comparison to the current MECP standards, only the 2015 report is discussed.

The report presents the findings of a Phase II ESA completed at the Site in 2009, much of which is carried over from a 2004 investigation, which included 26 boreholes/monitoring and 73 test pits. The 2015 update included the addition of four groundwater samples from existing monitoring wells and the installation and sampling of one new monitoring well. The investigation covers the entire CFB Rockcliffe property in addition to RSC Property.

The following summarizes the findings of the Phase Two ESA report with respect to the RSC Property.

The 2015 Phase Two ESA documents the findings of nineteen (19) test pits in the vicinity to buildings 11, 71, 69, 137 and 126 and included four borehole/monitoring wells. Of these investigation locations soil at eleven (11) of the locations reported exceedances. Zinc at TP31 in the shallow soil near building 71, PHCs and PAHs in shallow soils at TP126-1, TP61 and TP62 near building 126 and PHCs and PAHs in seven locations around building 137 extending up to 3.2 metres in depth. The impacts at building 137 are reported to be associated with a former gasoline UST and AST at the former indoor pool at this location. The impacts at the other areas are not associated with any specific PCA and are attributed to poor quality fill resulting from building demolition and filling and were limited to the upper 1.3 metres of soil.

Groundwater from monitoring well BHMW-15 at building 137 contained PHCs above the current standards, with the remaining monitoring wells meeting criteria.

The estimated quantity of contaminated soil was 4,425 m^3, 432 m^3 and 258 m^3 for the areas near buildings 137, 71 (TP31) and building 126, respectively.

The poor-quality fill (on-Site PCA) and fuel storage tanks (off-Site PCA) are considered as APECs for the RSC Property, however were reported as having been remediated.

3.2.4 DST 2016 Environmental Status Summary Letter

This document is a summary letter for the City of Ottawa on the status of the remediation works at the larger CFB Rockcliffe site and includes a summary of a post remediation groundwater sampling program. The letter states that a total of 62,000 m^3 of impacted soil and 2,300 m^3 of impacted groundwater was removed from the site from all areas, as of February 5, 2015 and that all the soils except one site (former Cannex gas station) met the MECP Table 3 residential standards. The Cannex site is outside the RSC Property. The letter indicates that there were two rounds of groundwater sampling completed across the site from all of the wells between March and August of 2015. Although the letter does not list the wells that were sampled it is assumed that the wells shown on the figure are the wells that were included in the program. An additional two rounds of groundwater sampling following additional groundwater remediation was completed at three sites (Buildings 29, 80 and 137). The information specific to the RSC Property is as follows.

The impacts identified at building 137, building 126/11 and TP31 are shown as having been remediated with the groundwater at building 137 shown as having ongoing remediation. Monitoring wells are present in each remediation area. Building 137 was shown to have elevated PHC (380 ug/L) in monitoring well 137-2 which resulted in additional groundwater remediation via pump and treat. Resampling completed 30 days after the additional remediation at this location was below the standards. It is noted that building 29, which is outside the RSC Property is shown as abutting the RSC Property and was also documented as having residual groundwater contamination and required additional groundwater remediation which reportedly was successful and are therefore the off-Site PCAs are not considered as APECs to the RSC Property.

3.2.5 DST 2017 Soil and Groundwater Remediation Volume 1

This report documented the remediation completed for five APECs identified in the former RSC area 1, which includes current development Phases 3, 4 and 5. These include the remediation of former building 47 (former heating oil AST), former building 126 (hydrocarbon staining in the fill at a former transmitter building), 137 (former AST and UST associated with the former swimming pool) and a test pit TP31 (metals impacts in fill). Although each area was remediated, excluding groundwater at former building 137, they are each considered as PCAs for the RSC Property.

3.2.6 Dillon 2019 Environmental Impact Statement

This report was prepared for the planning approvals process of the Site and included surveys for endangered and threatened species at the Site (SAR), including targeted surveys for select species. The findings of the assessment indicated there were SAR on the CFB Rockcliffe property, mainly in the north of the Site including the woodlands adjacent to the north property boundary. These included Category 2 retainable Butternut trees along the north boundary of the CFB Rockcliffe property and in the northwest part of the base property. There was also documented SAR bats present in the woodlots on and north of the base property.

4.0 SCOPE OF WORK

The objectives of the Phase Two ESA were to obtain information about environmental conditions in the soil and groundwater on, in or under the Site, and to develop the information necessary to complete a Record of Site Condition ("RSC") for the property. The objectives of this Phase Two ESA were achieved by:

- Developing an understanding of the geological and hydrogeological conditions at the Phase Two Property; and,
- Conducting field sampling for all contaminants of concern ("COCs") associated with each area of potential environmental concern ("APEC") identified in the Phase One ESA.

5.0 SCOPE OF THE INVESTIGATION.

The Phase Two ESA also includes a summary of the remedial activities and validation testing to confirm the removal of the impacts identified by the Phase Two ESA, as presented in Appendix G.

5.1 Overview

The Phase Two ESA investigation activities were completed between July 7, 2020, and December 14, 2022, and included the following tasks:

- **Health and Safety Plan**: Preparation of a Health and Safety Plan for internal and subcontractor use prior to initiating any field work at the Site.
- **Utility Clearances**: Coordination of utility clearances with local utility companies along with retaining the services of a private locator to assess for possible services in the areas of the proposed test locations.
- **Borehole Advancement and Monitoring Well Installation**: The borehole drilling and monitoring well installation programs included drilling of boreholes, each completed as groundwater monitoring wells, all of which were used for groundwater sampling at the Site. The rationale for the selected location of the boreholes is provided in the Sampling and Analysis Plan provided in Appendix A. The location of the boreholes and monitoring wells are provided in Figure 1. The monitoring well construction details are presented in Table 1.
- **Soil Sampling**: Selected soil samples were collected from the boreholes. Soil samples were submitted for chemical analysis of one or more of the following: petroleum hydrocarbons ("PHCs"); benzene, toluene, ethylbenzene, xylene ("BTEX"); polycyclic aromatic hydrocarbons ("PAHs"); metals; and/or hydride-forming metals.
- **Groundwater Monitoring and Sampling**: Groundwater samples were collected and submitted for analysis of one or more of the following: PHCs, BTEX, PAHs, metals, and/or hydride-forming metals.
- **Surveying**: An elevation survey for the boreholes and monitoring wells advanced as part of the Phase Two ESA investigation was completed following completion of the field work.
- **Reporting**: WSP compiled and assessed the field and laboratory results from the above noted activities into this report.

The Phase Two ESA was carried out in general accordance with WSP's standard operating procedures, which conform to the requirements of O. Reg. 153/04. The data from the Phase Two ESA investigation completed by WSP (and previously by Golder) at the Site were incorporated into a single Phase Two ESA report following the Phase Two ESA report format required by O. Reg. 153/04.

There were no impediments or access limitations that would affect the conclusions of this Phase Two ESA report.

5.2 Media Investigated

To address the potential environmental issues identified in the Phase One ESA, the Phase Two ESA field program included sampling of subsurface soil and of groundwater from wells screened within the bedrock at the Site. No sediment was present at the Site and therefore no sediment sampling was completed. A summary of media investigated, and the applicable contaminants of potential concern are provided in Tables 3 and 4. The sampling and analysis plan outlines the rationale for the field investigation activities carried out at the Site and the associated methodologies used to meet the objectives of this Phase Two ESA.

5.3 Phase One ESA Conceptual Site Model

The following key features (as required by O.Reg. 153/04) are presented in Figures 1 and 2:

- Existing buildings and structures
- Water bodies and areas of natural significance located in the Phase One Study Area
- Drinking water wells on the Phase One Property
- Roads (including names) within the Phase One Study Area
- Uses of properties adjacent to the Phase One Property
- Location of identified PCAs in the Phase One Study Area (including any storage tanks)

The following describes the Phase One ESA CSM based on the information obtained and reviewed as part of this Phase One ESA:

- At the time of the Site visit, conducted on June 10, 2022, the Phase One Property consisted of a 4.89-hectare parcel of currently undeveloped land that consisted of wood lot and a few old, paved roadways associated with the former CFB Rockcliffe military base. There were no structures currently present on the Site.
- The previous EIS reports identified an area of bat habitat on and within 30 m of the Site, specifically the endangered brown myotis. Additional ANSI, including more bat habitat and butternut trees are present on the ridgeline (NRC Woods) bordering the north of the Phase One Property. Therefore, the Site is considered an environmentally sensitive area.
- Potable water in the vicinity of the Phase One Property is provided by the City of Ottawa. No potable water wells were identified on the Phase One Property.
- At the time of the Phase One ESA, the surrounding properties to the north, east and west were undeveloped and the properties to the south and southwest were under development for parkland and residential housing.
- Historically, the Phase One Property has been occupied by a series of buildings and structures associated with the former CFB Rockliffe. Buildings 8, 9, 10, 11, 70, 71, 124 and 126 were located on the Phase One Property. The buildings were occupied by:
  - Building 8: Office – Chaplain's office
  - Building 9: Office – Special investigation department

- Building 10: Office – Eastern section investigation department
- Building 11: Ground telecom transmission site
- Building 70: Residential: Airwomens' barracks
- Building 71: Residential: NCO barracks
- Building 124: Office: ground training offices
- Building 126: transmission tower

- Previous subsurface investigation on-Site using test pits was completed in the vicinity of buildings 11, 69, 71 and 126. Exceedances of petroleum hydrocarbons (PHCs) polycyclic aromatic hydrocarbons (PAHs), and metals were identified in soil samples; however, these exceedances were attributed to poor fill quality likely resulting from various construction debris.
- There is a potential for abandoned storm sewers and watermains to be present on the Phase One Property attributed to past development of the Site, primarily along the older former roadways. There is a newer stormwater sewer (circa 2015) that runs north-south through the Phase One Property which connects the new development to a stormwater pond north of the Site.
- Historically, the surrounding lands were also developed with buildings for commercial use including lounge (building 15), hospital (building 134), medical storage (building 176), other storage (buildings 178 and 179), and an indoor swimming pool (building 137).
- Former building 137, located adjacent north of the central portion of the Site and demolished in 1997, operated as a swimming pool and included two fuel storage tanks – one above ground storage tank (AST) and an underground storage tank (UST). Previous investigations completed by other consultants identified TPH gas/diesel in the soil and groundwater at the location of the former tanks. Subsequently, the soil impacts were excavated and remediated in 2014. The soil remediation of the petroleum hydrocarbon impacts was validated and backfilled with granular B. Post remediation groundwater sampling identified residual groundwater impacts within the bedrock present south of the former soil remediation. Delineation of these residual groundwater impacts were completed in 2020 and 2022 using monitoring wells located on all sides of the identified impacts and downgradient of the former source. As such these groundwater impacts were confirmed to be limited to the area south of the former remediation and outside the Phase One Property. Therefore, the potential presence of PHC-impacts associated with this off-Site PCA is considered as having a reduced potential to be an APEC on the Phase One Property, however, additional groundwater sampling may be required to confirm these off-Site conditions and as such the groundwater issue off-Site remains as an APEC to the Phase One Property.
- Review of previous investigations completed in the vicinity of the Site (discussed under section 3.2) identified several off-Site PCAs within the study area including poor quality fill to the south and east, PHC remediations attributed to an automotive garage at Building 29 and possible fuel storage tanks at Building 22, as well as a fuel storage tank at Building 16 and Building 134. All off these off-site PCAs were subsequently remediated and validated except for Building 134 to the west, and are therefore these off-Site PCAs are not considered as resulting APECs to the Phase One Property. Building 134 is 60 metres cross gradient to the Phase One Property and the contamination was documented to be limited in extent and therefore is not considered to represent an APEC to the Phase One Property.

- The geological mapping that the overburden soils include alluvial deposits (medium grained stratified sand with some silt) and offshore marine deposits (clay, silty clay and silt). It also indicates there is no overburden soil in one area of the northern portion of the Site where bedrock is expected at surface.
- Bedrock consists of Bobcaygeon Formation (limestone with minor shale in the upper parts) on the southern portion of the Site and a mix of Rockcliffe Formation (sandstone, shale, limestone and dolostone) and Gull River Formation (limestone, with dolostone beds towards base).
- The nearest permanent watercourse is the Ottawa River which is located approximately 950 m north of the Site. A stormwater pond is located 200 m to the northeast.
- Local groundwater is anticipated to flow north towards the Ottawa River.
- Based on the available information reviewed, the only two APECs for the Site are associate with the presence of fill deposits across the entire parcel which include building demolition waste and the potential for migration of PHC impacted groundwater from off-Site building 137. There have been documented areas of soil impacts on-Site which were remediated and hence, are not considered APECs for the Site, but remain within the overall APEC associated with the fill. Other PCAs were located on surrounding lands to the Site, these off-Site PCAs were remediated and delineated to or before the Site boundary and therefore were not considered as APECs to the Phase One Property.

Table C: APECs and Associated PCAs Identified in the Phase One ESA

PCA and Description of the Activity	APEC	Location of APEC on the Site (Figure 2)	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)	Rationale for Potential Contribution of the PCA to an APEC
Importation of fill material of unknown quality (PCA 30) Use of imported fill during initial development and subsequent redevelopment activities at the Site	**APEC 1** - Potential for subsurface impacts due to the presence of impacted fill on the Site.	Site-wide	PHC F1 to F4, BTEX, PAHs, and metals	Soil	Presence of imported fill of unknown quality across the Site makes this on-Site PCA an APEC.
Gasoline and Associated Products Storage in Fixed Tanks (PCA 28) Off-Site former fuel storage tanks (one AST and one UST) associated with swimming pool in former Building 137 as well as associated groundwater impacts	**APEC 2** - Potential for groundwater impacts migrating on to the Site from the off-Site former fuel storage tanks associated with the swimming pool operation in former Building 137.	Central portion of the Site	PHC F1 to F4, BTEX, and PAHs	Groundwater	Presence of former fuel storage tanks within 50 m of the RSC Property as well as documented impacts to groundwater located upgradient of the Site makes this off-Site PCA an APEC for the Site.

5.4 Deviation from Sampling and Analysis Plan

There were no material deviations to the Phase One ESA requirements set out in O.Reg. 153/04 that would cause uncertainty or absence of information that would affect the validity of the Phase One Conceptual Site Model or the findings of this Phase One ESA.

5.5 Impediments

No physical impediments to the Phase Two ESA investigation were encountered. Access to the Phase Two Property was not denied or restricted.

6.0 INVESTIGATION METHOD

6.1 General

The following sections describe the field investigation methodology employed during the Phase Two ESA. The field work was conducted in three sessions. The first investigation was between July 7-8, 2020; the second investigation took place between June 27-29, 2021; and the final investigation of this Phase Two ESA was completed between July 22 and December 15, 2022. Three small localized remediations were completed at the RSC Property between September 2014 and January 2015 to remove impacted soil (identified in investigations completed by others which have been incorporated in the Phase Two ESA report) from the Site followed by confirmatory sampling. In addition, a soil and groundwater remediation for the exceedance in BHMW15 (associated with former fuel storage tanks around former Building 137) was completed off-Site with a portion of the remedial soil excavation extending on to the RSC Property which was validated by clean samples. The sampling methodology and analytical data from these remediations which are relevant to the RSC Property have been discussed in the Remediation Report (Appendix G from the Phase Two ESA report). The remediation for soil impacts identified in the Phase Two ESA was completed between October and December 2022. This remediation work, completed with full time supervision by a WSP staff, included removal of all impacted soil from the RSC Property, collection and analysis of confirmatory samples, and backfilling of the excavation.

Prior to initiating the field work, a Site-specific protocol to protect the health and safety of its employees and subcontractors was developed and implemented through the preparation of a Site-specific Health and Safety Plan. An assessment of potential health and safety hazards at the Phase Two Property and those associated with the proposed work was completed each day of the field program. A health and safety tail gate meeting were held with the subcontractors each day prior to completion of the field work. The document was reviewed and signed on-Site by field personnel prior to commencing work. Additionally, prior to any intrusive investigations, including drilling, public and private utility clearances were also obtained.

6.2 Borehole Drilling

A total of five boreholes (22-02 to 22-06) were advanced within the RSC Property boundary in 2022 to depths ranging between 7.92 and 12.19 mbgs. In general, the subsurface soil conditions encountered in the boreholes consisted of surficial topsoil and fill with predominantly gravelly silty sand that extended to maximum depth of 3.05 mbgs at 22-04. This was underlain by glacial till consisting of layers of silty sand, silty clay to clay, and gravelly silty sand to silty sand and gravel. All other borehole locations only consisted of fill layers followed by bedrock.

Bedrock was encountered in all five boreholes advanced during the Phase Two ESA at depths ranging between 0.61 and 7.92 mbgs.

6.3 Test Pit Excavation

In 2020, soil samples were collected from test pits at seven locations (TP4-01, TP4-02, TP4-10, TP4-12, TP4-13, TP4-15, TP4-16). The locations of the test pits are shown on Figure 1. Where possible, the test pits were excavated to bedrock or native soil, where present, and extended to depths ranging between of 0.9 to 2.30 mbgs.

In 2022, soil samples were collected from test pits at seven locations (T22-01 to TP22-07). The locations of the test pits are shown on Figure 1. Locates were obtained prior to excavation. Each test pit was mechanically excavated by a track-mounted excavator equipped with a toothed bucket. Where possible, the test pits were excavated to bedrock or native soil, where present, and extended to depths ranging between 1.5 to 4.8 mbgs.

Locates were obtained prior to excavation of the test pits and each test pit was mechanically excavated by a track-mounted excavator equipped with a toothed bucket and operated by Glenn Wright Excavating Ltd.

6.4 Soil Sampling

Soil samples were collected from undisturbed locations and split in the field into two components, where sufficient. One component was placed into laboratory-prepared container with minimal headspace and stored in a cooler for potential laboratory analysis. The second component was placed inside a plastic bag for field screening, consisting of the soil description, and noting the presence of any staining, odour and/or debris. Groundwater: Sampling

All five boreholes advanced were completed with monitoring wells (22-02 to 2-06) with screens in bedrock. A total of five samples (including a field duplicate of from 22-04) were collected on July 18, 2022. The monitoring well associated with 22-03 was dry and hence no sample could be collected from this location.

Each monitoring well was purged prior to sample collection. During purging, qualitative observations were made of water colour, clarity, and the presence of hydrocarbon sheen or odour. Purged was completed by pumping at least three well volumes or, where the well was considered a “low-yield” monitoring well, by purging at least one half of the well volume.

Groundwater samples were placed in laboratory-prepared containers and stored in a cooler until delivery to the analytical laboratory under chain-of-custody procedures. A summary of the groundwater samples submitted for analysis is presented in Table 4.

6.5 Groundwater: Field Measurements for Water Quality Parameters

Groundwater indicator parameters including temperature, pH, conductivity, oxidation-reduction potential (“ORP”) and dissolved oxygen were measured prior to sampling to ensure adequate well development and purging. A YSI water quality meter was used to measure groundwater quality during monitoring well development and groundwater sampling. The instrument was calibrated using factory supplied solutions for electrical conductivity (1413 micro-Siemens per centimetre (µS/cm)) and pH (4.01 pH and 7.01 pH) parameters. Specifications for the water quality meter are summarized in the following table:

Parameter	Measurement Range	Precision	Accuracy
pH	0.00 to 14.00 pH	0.01 pH	±0.2 pH
Conductivity	0.00 to 200 mS/cm	0.01 mS/cm	± 0.5%
Temperature	-5 to 45 ºC	0.1 ºC	± 0.15 ºC
Dissolved Oxygen	0 to 50 mg/L	0.01 mg/L	± 2%

6.6 Quality Assurance and Quality Control Measures

WSP's quality assurance program for environmental investigations was implemented to ensure that analytical data obtained by the investigation were valid and representative. The quality assurance program included the following measures:

- The use of standard operating procedures for all field investigation activities.
- All monitoring wells were developed following installation to remove fine particles from the filter pack and any fluids introduced during drilling.
- Monitoring wells were appropriately purged prior to groundwater sample collection to remove stagnant water from the well bore and improve sample representativeness, minimizing sample agitation and aeration to the extent practicable.
- The collection of field duplicate samples at a minimum frequency of one duplicate for every ten samples.
- The collection of at least one trip blank for sampling events that include the analysis of volatile organic compounds in groundwater.
- Initial calibration of field equipment was performed at the start of each field day, with a daily check of calibration, as needed, using a standard of known concentration.
- Soil and groundwater samples were handled and stored in accordance with the sample collection and preservation requirement of the MECP "*Protocol for Analytical Methods Used in the Assessment of Properties Under Part XV.I of the Environmental Protection Act"*, July 1, 2011. Samples were collected directly into pre-cleaned, laboratory-supplied sample containers with the appropriate preservative for the analyte group. Upon collection, samples were placed in insulated coolers with ice for storage and transport to the analytical laboratory under chain-of-custody.
- Dedicated sampling equipment (tubing and foot valves) and clean disposable Nitrile™ gloves were used at each sampling location to prevent cross-contamination. All non-dedicated sampling equipment (e.g., water level meters, split spoons) was decontaminated between sampling locations. Sampling equipment in contact with soil, groundwater, or sediment was cleaned by mechanical means; washed with a phosphate-free, laboratory-grade detergent (e.g., LiquiNox) and, if necessary, an appropriate desorbing wash solution; and thoroughly rinsed with analyte-free water.
- Detailed field records documenting the methods and circumstances of collection for each field sample were prepared at the time of sample collection. Each sample was assigned a unique sample identification number recorded in the field notes, along with the date and time of sample collection, the sample matrix, and the requested analyses.
- The submission of samples to the analytical laboratory in accordance with standard chain of custody procedures.

7.0 REVIEW AND EVALUATION

7.1 Geology

In general, the subsurface soil conditions encountered in the boreholes and test pits consisted of surficial topsoil and fill of variable depths (up to 3.05 mbgs at borehole 22-04), with predominantly gravelly silty sand that extend to the maximum depth of investigation (7.92 mbgs at 22-04). At numerous investigation locations, silt and clays interbedded with sands and gravels were observed in the filllayer. A representative geologic cross-section of the Site is presented in section 6.2 as well as Figures 5A to 6C.

Bedrock was encountered in five of the six boreholes advanced during the Phase Two ESA with depth ranging between 0.61 and greater than 7.92 mbgs. Given that the average thickness of overburden at the Site is less than 2 m, the RSC Property is considered a shallow soil property as defined by O.Reg. 153/04 (as amended).

7.2 Groundwater: Elevation and Flow Direction

The local and regional groundwater flow direction is expected to be north following the considerable drop in ground surface elevation towards the Ottawa River to the north. It is anticipated that the storm and sanitary sewer may be influencing the groundwater elevations in the area near the sewer, and that localized flow towards the sewer maybe occurring.

Static groundwater levels were measured in the monitoring wells (except for 22-03 which was dry) located across the Site on July 18, 2022. Figure 2 shows groundwater elevations and the interpreted groundwater flow direction. Groundwater elevations ranged from 77.57 to 82.14 masl (7.33 to 9.44 mbgs), on July 18, 2022. Groundwater is contained within the bedrock aquifer.

7.3 Groundwater: Hydraulic Gradients and Velocity

The horizontal hydraulic gradient was estimated for groundwater conditions based on water levels collected on July 18, 2022, and the inferred groundwater contours are presented on Figure 2. The horizontal hydraulic gradient for groundwater conditions was 0.043 m/m. Vertical hydraulic gradients were not calculated as no COC were identified in groundwater exceeding the site condition standards and as such, no nested monitoring well pairs were installed.

Groundwater flow velocity was determined based on the hydraulic conductivity of 1.5×10^{-11} m/s (source: https://structx.com/Soil_Properties_006.html) and assumed porosity of 20% for limestone (source: http://worthingtongroundwater.com/?page_id=131#:~:text=Most%20flow%20in%20bedrock%20aquifers,in%20the%20range%200.01%2D0.4), and the hydraulic gradient. The groundwater flow velocity within limestone was calculated to be 3×10^{-12} m/s. Note that the actual groundwater velocity may vary significantly not only because of the variability of the hydraulic gradient, but also because of the variability of the hydraulic conductivity due to presence of the sewer trench excavation on the RSC Property.

7.4 Fine-Medium Soil Texture

Based on field observations, more than 50% of particles (by mass) in the soil were equal to or greater than 75 µm in mean diameter. Accordingly, soil at the Phase Two Property is considered to be coarse-textured.

7.5 Soil Quality

Table 2 provides a summary of the soil samples submitted for analysis and the associated test parameters. The analytical results of soil samples are presented in Tables 5A to 5C. The soil samples submitted for analysis are presented on Figures 4A through 6C and Figures G2A through G5B. Laboratory Certificates of Analysis for the soil samples are included in Appendix D.

A summary of the number of soil samples analyzed and the number of soil samples exceeding the Table 1 site condition standards is provided below:

- **Fill (soil)** – A total of thirty-five (35) fill/reworked native samples identified in Table 4 were analyzed for PHC F1 to F4, BTEX, PAHs and/or metals as part of the WSP 2022 Phase Two ESA. In addition, previous investigations included five samples that were analyzed for PHC F1 to F4, BTEX, PAHs and/or metals Altogether, six of these samples exceeded applicable MECP Table 1 Standards for PHCs, and seven samples exceeded for various PAHs. The exceedances were limited to three distinct areas:
  - Two separate areas near former Building 126 on the east portion of the RSC Property.
  - One area in the recently constructed sewer trench, west of the former off-Site Building 137.

  These impacts were located entirely within the fill materials and were found at depths up to 3.8 mbgs.

7.6 Groundwater Quality

Table 4 provides a summary of the groundwater samples submitted for analysis and the associated test parameters. The analytical results of groundwater samples are presented in Tables 6A to 6C. The soil samples submitted for analysis are presented on Figures 4A through 6C and Figures 3A through 3C. Laboratory Certificates of Analysis for the soil samples are included in Appendix D.

Groundwater quality assessment included sampling of 4 monitoring wells in 2022, which were installed around at the boundary of the RSC Property adjacent to the off-Site PCA. Table 4 summarized the groundwater analyses performed. Concentrations of PHC F1 to F4, BTEX, PAHs and metals in all the samples were below the applicable site condition standards.

Summary of Current Site Condition – Post-Remediation

Following remediation, all contaminated soil was removed form the Site. The verification sampling program included the collection of samples as per the guidance for sampling and analysis frequency is provided in O. Reg 153/04, as amended, Schedule E, Table 3 (Minimum Confirmation Sampling Requirements for Excavation). All the validation samples met the applicable MECP Table 1 Standards. As a result, no contaminated soil above the applicable site conditions standards remains on the Site.

No groundwater remediation was required and completed at the Site.

Additional information on the remedial activities is presented in Appendix G.

7.7 Data Quality Review

The quality assurance assessment of the field duplicate sample results was conducted according to the MECP document "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act*", March 9, 2004 (amended in July 2009 and effective as of July 1, 2011) ("Analytical Protocol").

To determine the precision of the analytical methods and field sampling procedures, blind duplicate samples were collected during soil and groundwater sampling. Precision is determined by the relative percent difference ("RPD") between the duplicate and original samples and was calculated as follows:

$$RPD = \frac{|x_1 - x_2|}{x_m}$$

Where
x_1 initial sample results
x_2 duplicate sample results
x_m mean of x_1, x_2

The analytical results of the primary and duplicate soil and groundwater samples indicated a satisfactory correlation between the primary and duplicate samples and were within the 30% recommended control limit in the Analytical Protocol.

It is noted that the trip blank samples were found to have no detectable concentrations. The quality of the analytical results is further supported by analytical laboratory's internal quality assurance program that includes laboratory blanks, spikes, surrogates and duplicate samples.

All certificates of analysis or analytical reports received pursuant to clause 47 (2) (b) of the regulation comply with subsection 47(3). A certificate of analysis or analytical report has been received for each sample submitted for analysis and is provided in Appendix D. The analytical laboratory did not qualify any of the analytical results.

Accordingly, the analytical data generated during the investigation are valid and representative and may be used in this Phase Two ESA without further qualification.

8.0 PHASE TWO CONCEPTUAL SITE MODEL

The Phase Two ESA Conceptual Site Model (CSM) described below is based on data from previous investigations and on the results of this Phase Two ESA. The CSM consists of diagrams, cross-sections and figures that show the current condition of the RSC Property. A narrative description is provided to explain the contents of the figures and an interpretation of the contaminant distribution.

The figures that comprise the Phase Two CSM include:

Figure 1: Site Plan with Former Buildings and Areas of Potential Environmental Concern

Figure 2: Groundwater Elevations, Interpreted Shallow Groundwater Flow Direction and Cross Section Locations

Figure 3A: Metals Analysis and Exceedances in Groundwater

Figure 3B: PAH Analysis and Exceedances in Groundwater

Figure 3C: PHC Analysis and Exceedances in Groundwater

Figure 4A: Metals Analysis and Exceedances in Soil

Figure 4B: PAH Analysis and Exceedances in Soil

Figure 4C: PHC Analysis and Exceedances in Soil

Figure 5A: Cross-Section A-A' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances in soil.

Figure 5B: Cross-Section A-A' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances in soil.

Figure 5C: Cross-Section A-A' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances in soil.

Figure 6A: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with metals analysis and exceedances in soil.

Figure 6B: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PAH analysis and exceedances in soil.

Figure 6C: Cross-Section B-B' (Interpreted geological and hydrogeological conditions) with PHC analysis and exceedances in soil.

Figure 7: Conceptual Site Model Potential Receptor Pathways (Pre-Remediation)

In addition, following figures are associated with the remediation report (included in Appendix G):

Figure G1: Remedial Excavations at the RSC Property

Figure G2a: Cross-Section C-C' with metals analysis and exceedances in soil at TP31 remediation

Figure G3a: Cross-Section D-D' with metals analysis and exceedances in the sewer trench remediation

Figure G3b: Cross-Section D-D' with PAH analysis and exceedances in the sewer trench remediation

Figure G3c: Cross-Section D-D' with PHC analysis and exceedances in the sewer trench remediation

Figure G4a: Cross-Section E-E' with PHC analysis and exceedances in soil at BLD 126-1 remediation

Figure G5a: Cross-Section F-F' with PAH analysis and exceedances in soil at BLD 126-2 remediation

Figure G5b: Cross-Section F-F' with PHC analysis and exceedances in soil at BLD 126-2 remediation

The figures were prepared using data from the RSC Property and supplemented with off-Site data from the remediation areas which spanned both on- and off-Site of the RSC Property.

8.1 Physical Setting

The RSC Property consisted of a 4.89-hectare parcel of currently vacant land that consisted of a few old, paved roadways associated with the former CFB Rockcliffe military base. There were no structures currently present on the Site. Historically, the RSC Property was occupied by a series of buildings and structures associated with the former military base and were used for:

- Building 8: Office – Chaplain's office
- Building 9: Office – Special investigation department
- Building 10: Office – Eastern section investigation department
- Building 11: Ground telecom transmission site
- Building 70: Residential: Airwomens' barracks
- Building 71: Residential: NCO barracks

- Building 124: Office: ground training offices
- Building 126: transmission tower

The surrounding properties to the north, east and west are undeveloped and the properties to the south and southwest are under development for parkland and residential housing. Historically, the surrounding lands were also developed as part of the military activities associated with CFB Rockcliffe with buildings for commercial use including lounge (building 15), hospital (building 134), medical storage (building 176), other storage (buildings 178 and 179), and an indoor swimming pool (building 137).

Stratigraphy

A representative geologic cross-section of the Site is presented in Figures 5A to 6C. In general, the subsurface soil conditions encountered in the boreholes and test pits consisted of surficial topsoil and fill of variable depths (up to 3.05 mbgs at borehole 22-04), with predominantly gravelly silty sand that extend to the maximum depth of investigation (7.92 mbgs at 22-04). At numerous investigation locations, silt and clays interbedded with sands and gravels were observed in the fill and glacial till layers.

Depth to Bedrock

Bedrock was encountered in five of the six boreholes advanced during the Phase Two ESA with depth ranging between 0.61 and greater than 7.92 mbgs. Given that the average thickness of overburden at the Site is less than 2 m, the RSC Property is considered a shallow soil property as defined by O.Reg. 153/04 (as amended).

Subsurface Structures and Utilities

A storm and sanitary sewer line runs north-south through the RSC Property which connects the newly developed areas to the south of the Site to a stormwater pond north of the Site. Based on the review of a cross-section drawing, this sewer line excavation and associated backfill materials extends to a depth of approximately 9 mbgs or 78 masl. The drawing notes clay dykes were installed in the trench to reduce groundwater migration along the sewer trench.

At the time of the Phase Two ESA and remedial excavations, public and private utility locates were completed to clear the borehole and test pit locations. Underground utility drawings and review of previous subsurface investigation did not indicate presence of any other buried utilities within the RSC Property. In addition, no groundwater impacts were identified on the RSC Property indicating that migration of COCs via subsurface utilities and structure including the sewer trench is not considered an issue of concern for the Site. Furthermore the identified sewer does not extend or intersect the documented off-Site groundwater impacts at former building 137.

Groundwater Levels and Flow Direction

The local and regional groundwater flow direction is expected to be north following the considerable drop in ground surface elevation towards the Ottawa River to the north. It is anticipated that the storm and sanitary sewer may be influencing the groundwater elevations in the area near the sewer, and that localized flow towards the sewer maybe occurring.

Static groundwater levels were measured in the monitoring wells (except for 22-03 which was dry) located across the Site on July 18, 2022. Figure 2 shows groundwater elevations and the interpreted groundwater flow direction. Groundwater elevations ranged from 77.57 to 82.14 masl (7.33 to 9.44 mbgs), on July 18, 2022. Groundwater is contained within the bedrock aquifer.

Hydraulic Gradients

The horizontal hydraulic gradient was estimated for groundwater conditions based on water levels collected on July 18, 2022, and the inferred groundwater contours are presented on Figure 2. The horizontal hydraulic gradient for groundwater conditions was 0.043 m/m. Vertical hydraulic gradients were not calculated as no COC were identified in groundwater exceeding the site condition standards and as such, no nested monitoring well pairs were installed.

Groundwater Velocity

Groundwater flow velocity was determined based on the hydraulic conductivity of 1.5 x 10^{-11} m/s (source: https://structx.com/Soil_Properties_006.html) and assumed porosity of 20% for limestone (source: http://worthingtongroundwater.com/?page_id=131#:~:text=Most%20flow%20in%20bedrock%20aquifers,in%20the%20range%200.01%2D0.4), and the hydraulic gradient. The groundwater flow velocity within limestone was calculated to be 3 x 10^{-12} m/s. Note that the actual groundwater velocity may vary significantly not only because of the variability of the hydraulic gradient, but also because of the variability of the hydraulic conductivity due to presence of the sewer trench excavation on the RSC Property.

SITE CONDITION STANDARDS

Non-Potable Groundwater Standards

Non-potable groundwater standards are applicable to the Site as:

- Potable water at the Site and the surrounding area within 250 m of the RSC Property is provided by the City of Ottawa and no potable water wells were identified on the RSC Property or within 250 m of the RSC Property.
- The Site standards being applied are not agricultural or other type of property use.
- WSP has given written notice of the intention to apply the standards to the municipality and has not received any written notice that the municipality objects to the use of these standards of the request made more than 30 days ago. The request sent to the municipality is attachment to this report.

Environmentally Sensitive Areas

An area of natural significance was identified on or within 30m of the Site due to presence of bat habitat potentially used by endangered bat species (brown myotis) as well as documented butternut trees to the north and east of the Site. As such the RSC Property is considered an environmentally sensitive area.

Two soil samples were submitted for pH analysis. The reported pH of all samples met the requirements that the pH of surface soil is 5≤pH≤9 and the pH of sub-surface soil is 5≤pH≤11.

Accordingly, Section 41 of the Regulation applies to the RSC Property due to the presence of an environmentally sensitive area on and adjacent to the RSC Property.

Shallow Soil Property or Water Body

Bedrock was encountered during the Phase Two investigation in five of the six borehole locations with depths ranging between 0.61 and 7.92 mbgs. Given that the average thickness of overburden at the Site is less than 2 m, the Site is considered to be a shallow soil property as defined by O.Reg. 153/04 (as amended). The deeper overburden was encountered within the suspected trench excavated for the sewer trench installation.

The property does not include all or part of a water body and is not adjacent to a water body or include land that is within 30 metres of a water body. Accordingly, Section 43.1 of the Regulation does not apply to the RSC Property.

Imported Soil

As identified in the Phase One ESA, fill may be present under the entire footprint of the RSC Property, resulting from past development and demolition activities, primarily in the areas for previous buildings and infrastructure such as the sewer trench. This fill was present at time of the Phase Two ESA. Backfill imported to the RSC property during the remediation work included soil fill from elsewhere in the Wateridge development (Phase 7 to the east of the Site), as discussed in the remediation report in Appendix G. This fill was characterised and validated to the site condition standards following the required in sampling frequency required under Ontario Regulation 406/19 and 153/04, prior to being used on the RSC Property.

Proposed Buildings and Other Structures

No renovations or modifications to the RSC Property has been proposed; however, the Canada Lands Company is considering disposition of the property and a future owner may wish to consider redevelopment of the Phase Two Property to a residential property use. The location of any proposed residential buildings and other structures is unknown.

Naturally Occurring Metals - Reliance on 49.1 - Applicable Standards Deemed to be Met

Exceedances of barium, chromium, cobalt, and vanadium in the soil samples were considered to have resulted from naturally occurring elevated concentrations due to the presence clay in the fill layer. The concentrations present were within the range of typical of the marine clays of eastern Ontario. As such the metals are considered to be natural in origin and within typical background levels for the Ottawa area and are therefore not an exceedance of the site condition standards. A rationale for such naturally occurring metals above the MECP Table 1 Standards is appended to this report (Appendix F). The qualified person has determined these exceedances do not exceed the naturally occurring range of concentrations typically found within the area where the property is located as outlined in Section 49.1.3 in O.Reg 153.

These locations and the associated concentrations are provided on Figure 4A and the relevant cross sections.

POTENTIAL SOURCES OF CONTAMINATION

Potentially Contaminating Activities (PCAs) and Areas of Potential Environmental Concern (APECs)

Based on the information obtained as part of the Phase One ESA, the following PCAs were identified that were inferred to result in APECs for the RSC Property, as shown in Figure 2:

Table D: APECs and Associated PCAs Identified in the Phase One ESA

PCA and Description of the Activity	APEC	Location of APEC on the Site (Figure 2)	Contaminants of Potential Concern	Media Potentially Impacted (groundwater, soil and/or sediment)	Rationale for Potential Contribution of the PCA to an APEC
Importation of fill material of unknown quality (PCA 30) Use of imported fill during initial development and subsequent redevelopment activities at the Site	**APEC 1 -** Potential for subsurface impacts due to the presence of impacted fill on the Site.	Site-wide	PHC F1 to F4, BTEX, PAHs, and metals	Soil	Presence of imported fill of unknown quality across the Site makes this on-Site PCA an APEC.
Gasoline and Associated Products Storage in Fixed Tanks (PCA 28) Off-Site former fuel storage tanks (one AST and one UST) associated with swimming pool in former Building 137 as well as associated groundwater impacts	**APEC 2 -** Potential for groundwater impacts migrating on to the Site from the off-Site former fuel storage tanks associated with the swimming pool operation in former Building 137.	Central portion of the Site	PHC F1 to F4, BTEX, and PAHs	Groundwater	Presence of former fuel storage tanks within 50 m of the RSC Property as well as documented impacts to groundwater located upgradient of the Site makes this off-Site PCA an APEC for the Site.

Findings of the Phase Two ESA with Respect to the APECs and Associated PCAs

To address the APECs and PCAs identified at the Site, soil and groundwater sampling and analysis for potential COCs were completed as part of this Phase Two ESA and previous Phase Two ESAs. A summary of the findings of the Phase Two ESA with respect to the APECs and associated PCAs identified by the Phase One ESA with respect to the Site is provided in the table below.

Table E: Phase Two ESA Investigation Results for Each APEC

APEC	PCA	Summary of Phase Two ESA Program	Summary of Exceedances (pre-remediation)	Summary of Exceedances (post-remediation)
#1	#30. Importation of Fill Material of Unknown Quality	In 2014, five samples (TP61 SGS1, TP62 SGS1, TP126-1 S1, TP126-2 S1, BHMW14 SS2) were analyzed for PHC F1 to F4, BTEX, PAHs and metals. In 2020, seven soil samples (TP4-01 SA1, TP4-02 SA1, TP4-10 SA1, TP4-12 SA1, TP4-13 SA1, TP4-15 SA1, TP4-16 SA1) from a test pit program were analyzed for PHC F1 to F4, BTEX, PAHs and metals. In 2022, seven soil samples (BH22-02 SA1, BH22-03 SA1, BH22-03 SA2, BH22-04 SA2, BH22-04 SA7, BH22-05 SA2, BH22-06 SA1) and a field duplicate of BH22-04 SA2 were analyzed for PHC F1 to F4, BTEX, PAHs and metals to investigate the identified APEC. During the delineation test pit program in October 2022, twenty (20) soil samples	Three samples (TP61 SGS1, TP62 SGS1, BHMW15 SS5) had exceedance of PHCs. Two samples (TP62 SGS1 and BHMW15 SS5) exceeded MECP Table 1 standards for several PAHs. No exceedances in the soil samples from 2020 for any of the parameters analyzed. BH22-03 SA2 and field duplicate of BH22-04 SA2 exceeded for several PAHs (anthracene, benz(a)anthracene, benzo(b)fluoranthene, fluoranthene, pyrene).	None, given all the samples with exceedances were subsequently removed and revalidated as part of the remediation. No exceedance for groundwater.

APEC	PCA	Summary of Phase Two ESA Program	Summary of Exceedances (pre-remediation)	Summary of Exceedances (post-remediation)
		were analyzed to delineate the impacted fill associated with the sewer trench. These samples included TP22-01 SA1, TP22-01 SA2, TP22-01 SA3, TP22-02 SA1, TP22-02 SA2, TP22-02 SA3, TP22-03 SA1,TP22-03 SA2, TP22-04 SA1, TP22-04 SA2, TP22-04 SA3, TP22-05 SA1, TP22-05 SA2, TP22-05 SA3, TP22-06 SA1, TP22-06 SA2, TP22-06 SA3, TP22-07 SA1, TP22-07 SA2, and TP22-07 SA3 In July 2022, four groundwater samples (22-02, 22-04, 22-05 and 22-06) and a field duplicate of 22-04 in 2022 was analyzed for PHC F1 to F4, BTEX, PAHs and metals.	TP22-01 SA3 and TP22-02 SA2 exceeded for PHC F4 and F2, respectively. TP22-02 SA1, TP22-04 SA2 and TP22-06 SA3 had exceedances of acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, fluoranthene, and/or phenanthrene. No exceedances in any of the groundwater samples analyzed.	
#2	#28 Gasoline and Associated Products Storage in Fixed Tanks	Four groundwater samples (22-02, 22-04, 22-05 and 22-06) and a field duplicate of 22-04 in 2022 was analyzed for PHC F1 to F4, BTEX, PAHs and metals.	No exceedances in any of the groundwater samples analyzed.	No exceedance in groundwater.

Summary of Current Site Condition – Pre-Remediation

The summary of the soil and groundwater conditions at the Site based on the results of the Phase Two ESA, by stratigraphic layer and media, is presented below. The soil samples submitted for analysis are presented on Figures 4A through 6C and Figures G2A through G5B. The groundwater samples submitted for analysis are presented on Figures 3A to 3C.

- **Fill (soil)** – A total of thirty-five (35) fill/reworked native samples identified in Table 4 were analyzed for PHC F1 to F4, BTEX, PAHs and/or metals as part of the WSP 2022 Phase Two ESA. In addition, previous investigations included five samples that were analyzed for PHC F1 to F4, BTEX, PAHs and/or metals Altogether, six of these samples exceeded applicable MECP Table 1 Standards for PHCs, and seven samples exceeded for various PAHs. The exceedances were limited to three distinct areas:
  - Two separate areas near former Building 126 on the east portion of the RSC Property.
  - One area in the recently constructed sewer trench, west of the former off-Site Building 137.

  These impacts were located entirely within the fill materials and were found at depths up to 3.8 mbgs.
- **Groundwater** – Groundwater quality assessment included sampling of 4 monitoring wells in 2022, which were installed around at the boundary of the RSC Property adjacent to the off-Site PCA. Table 4 summarized the groundwater analyses performed. Concentrations of PHC F1 to F4, BTEX, PAHs and metals in all the samples were below the applicable site condition standards.

Summary of Current Site Condition – Post-Remediation

Following remediation, all contaminated soil was removed form the Site. The verification sampling program included the collection of samples as per the guidance for sampling and analysis frequency is provided in O. Reg 153/04, as amended, Schedule E, Table 3 (Minimum Confirmation Sampling Requirements for Excavation). All the validation samples met the applicable MECP Table 1 Standards. As a result, no contaminated soil above the applicable site conditions standards remains on the Site.

No groundwater remediation was required and completed at the Site

DELINEATION OF CONTAMINANT IMPACTS

APEC Where Contaminants are Present at a Concentration Above the Applicable Site Condition Standard

The reported concentrations of all soil and groundwater samples submitted for analysis following the completion of the remedial excavation indicate that soil and groundwater quality meets the applicable site condition standards. Any soil sample with exceedance identified have been remediated and removed from the RSC Property. Impacts present before remediation were located within the fill and were above the groundwater table. The fill around and below each impacted sample was removed to either bedrock or validated clean excavation floor with validated clean excavation walls.

Contaminant Distribution

No contaminants were present in soil, groundwater or sediment samples at a concentration greater than the applicable site condition standards following remediation. As indicated above, no groundwater impacts were present on the RSC Property and all of the remediated soil impacts were limited to the shallow fill, primarily in areas where former buildings and infrastructure were present.

Potential Reason for Discharge into the Environment at the Site

Impacts at the property were limited to the fill and are the result of building demolition activities and resulting mixing of debris with the fill in areas where former buildings and infrastructure were present. Off-Site impacts originated from a historical release from off-Site fuel storage.

Contaminant Migration

Fill impacts (pre-remediation) were delineated to the upper fill and not in contact with groundwater, nor found to be present in the groundwater and therefore were considered to be immobile. These have subsequently been remediated.

Off-Site, the PCA resulting in APEC 2 had resulted in localized soil impacts off-Site and was found to have entered bedrock up to the groundwater table. These impacts were found to have migrated to the north, east and west of the former tanks within the bedrock. As discussed, monitoring wells on the RSC Property confirmed the off-Site impacts in groundwater had not migrate onto the RSC Property and off-Site remediation work for these impacts was undertaken in 2022 and have removed these residual groundwater impacts and the potential for future migration onto the RSC Property.

Meteorological and Climatic Considerations

Seasonal fluctuation in water levels on the Site should be expected. Given the limited number of monitoring events seasonal trends could not be identified. Shallow groundwater water levels are typically highest following the spring recharge and decline throughout the summer and fall months into the winter.

Soil Vapour Intrusion Pathways

No contaminants in soil or groundwater were identified in exceedance of applicable MECP site condition standards following remediation activities and therefore vapour intrusion is not a concern for future buildings at the site.

CROSS-SECTIONS

Lateral and Vertical Distribution of Contaminants

A representative cross-section is presented in Figure 5A to 6C.

POTENTIAL EXPOSURE PATHWAYS AND RECEPTORS

Following the remediation, no contaminants were present at concentrations greater than the applicable site condition standards and therefore potential release and transport mechanisms, exposure pathways and human and ecological receptors are not considered further.

9.0 REMEDIATION

Remediation of impacted soil (4,630 m^3) identified on the RSC property was conducted and details of the remediation work including sampling density, soil removal and backfilling are included in Appendix G (Remediation Report). The validation sampling following removal of the impacted soil met the minimum sampling density requirements outlined in Table 3 of Schedule E of O.Reg. 153/04. No groundwater was observed entering the remedial excavation.

10.0 CONCLUSIONS

The Phase Two ESA investigated the two APECs identified in the Phase One ESA.

Based on the results of the soil (APEC 1 - fill) and groundwater (Apec 2 – off-site PHC and PAH exceedances in groundwater) samples submitted as part of this Phase Two ESA and following remediation, the reported concentrations of the contaminants of potential concern were below the applicable site condition standards as of the certification date (December 14, 2022). No risk assessment or further remediation is required prior to the submission of a RSC.

The data presented in this report follows the O. Reg. 153/04 Phase Two ESA report format.

11.0 SIGNATURES

The undersigned Qualified Person confirms that he/she was responsible for conducting and/or supervising this Phase Two ESA and the associated findings and conclusions.

We trust that you will find the contents of this report satisfactory for your current needs. Should you require clarification of the information provided, please do not hesitate to contact the undersigned.

WSP Canada Ltd.

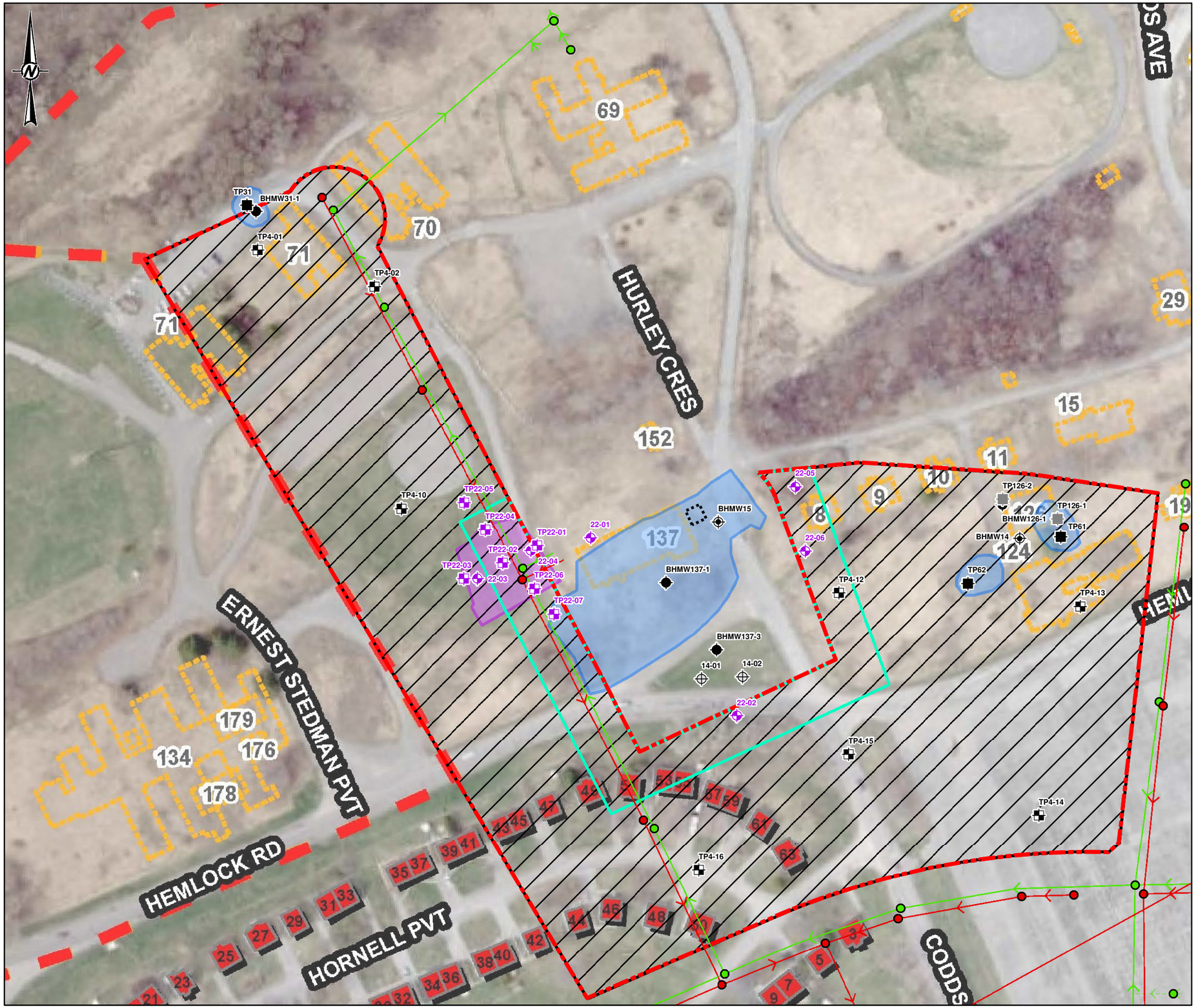
Shihan Chowdhury, P.Eng.
Environmental Engineer

Keith Holmes, BSc (Hons), MSc., P. Geo.
Principal Geoscientist, Contaminated Sites

SAC/LT/KPH/ha/sg

https://golderassociates.sharepoint.com/sites/110705/project files/6 deliverables/phase two esas/phase two esa - phase 4-1_rsc/phase two esa report/19124906 clc phase two esa_ phase 4 rsc - final.docx

Figures



LEGEND

- TEST PIT LOCATION (GOLDER/WSP, 2022)
- MONITORING WELL LOCATION (GOLDER, 2022)
- TEST PIT LOCATION (GOLDER, 2020)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- TEST PIT LOCATION (DST, 2009)
- TEST PIT LOCATION (GREENBANK, 2004)
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- FORMER FUEL STORAGE TANKS (PCA #28): REMOVED IN 1992 AND LOCATION IS INFERRED BASED ON THE LEVEL OF CONTAMINATION OBSERVED
- HISTORICAL RESIDENTIAL BUILDING FOOTPRINT
- HISTORICAL BUILDING FOOTPRINT
- PHASE TWO PROPERTY AND RSC BOUNDARY
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- APEC 1 (PCA #30)
- APEC 2 (ASSOCIATED WITH PCA #28)

Areas of Potential Environmental Concern ("APEC")

APEC#	Detail	PCA#
1	Fill of unknown quality, including building demolistion waste, expected to be present across the entire Site.	30
2	Former fuel storage tanks (one AST and one UST) associated with former swimming pool in Building 137 and associated soil and groundwater impacts	28

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60

1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
SITE PLAN WITH FORMER BUILDINGS AND AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

CONSULTANT

wsp

YYYY-MM-DD	2023-01-20
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	1

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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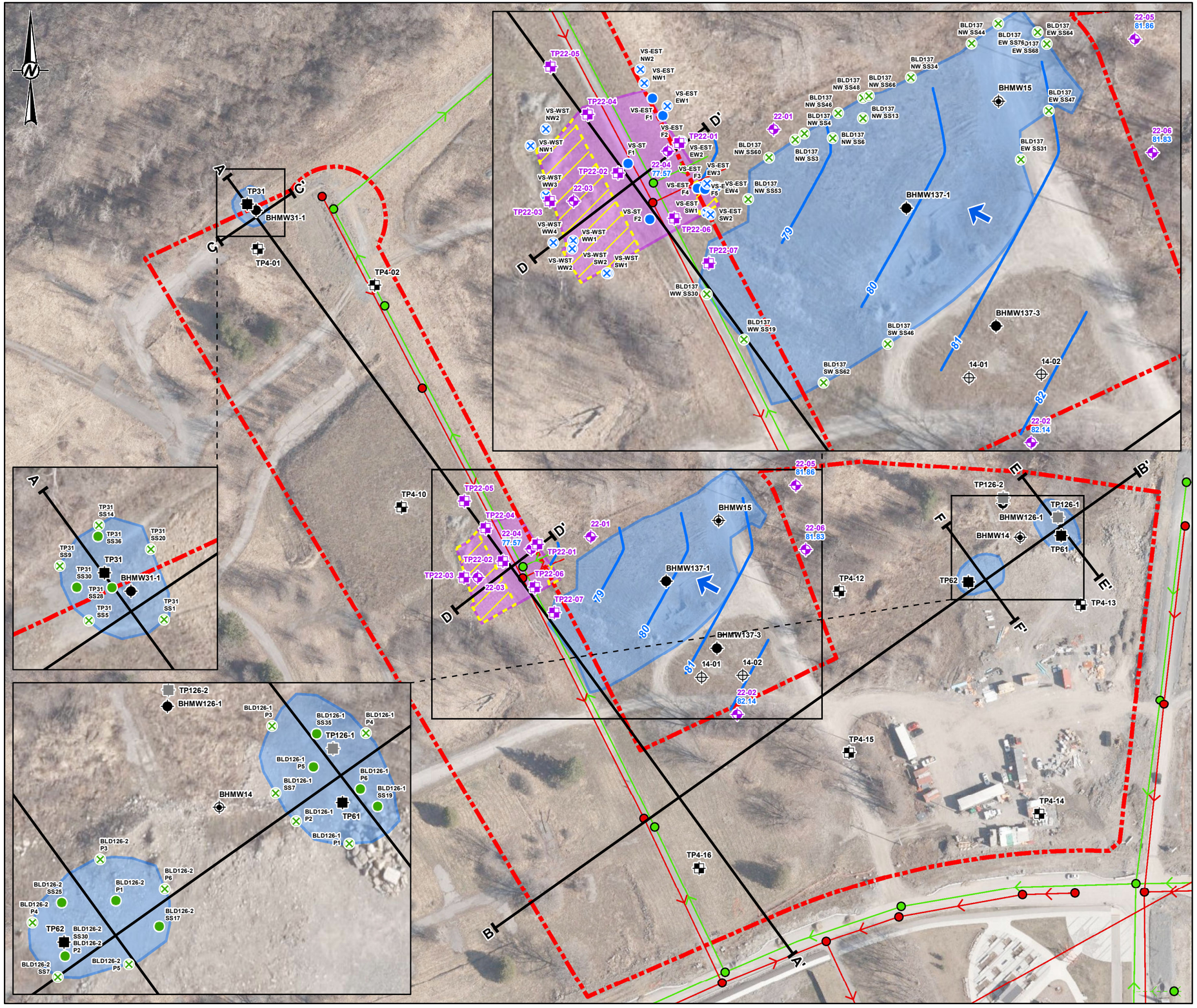

LEGEND

- TEST PIT LOCATION (GOLDER/WSP, 2022)
- MONITORING WELL LOCATION (GOLDER, 2022)
- TEST PIT LOCATION (GOLDER, 2020)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- TEST PIT LOCATION (DST, 2009)
- TEST PIT LOCATION (GREENBANK, 2004)
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 9999 GROUNDWATER ELEVATION, mASL
- GROUNDWATER ELEVATION CONTOUR, mASL
- INTERPRETED GROUNDWATER FLOW DIRECTION
- CROSS-SECTION LOCATION
- PHASE TWO PROPERTY AND RSC BOUNDARY
- LOCATION WHERE 2022 REMEDIATION WAS TERMINATED ON BEDROCK
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60

1:1,500 METRES

CLIENT

CLC LIMITED

PROJECT

PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE

GROUNDWATER ELEVATIONS, INTERPRETED SHALLOW GROUNDWATER FLOW DIRECTION, AND CROSS-SECTION LOCATIONS

CONSULTANT

wsp

YYYY-MM-DD	2023-01-20
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	2

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:

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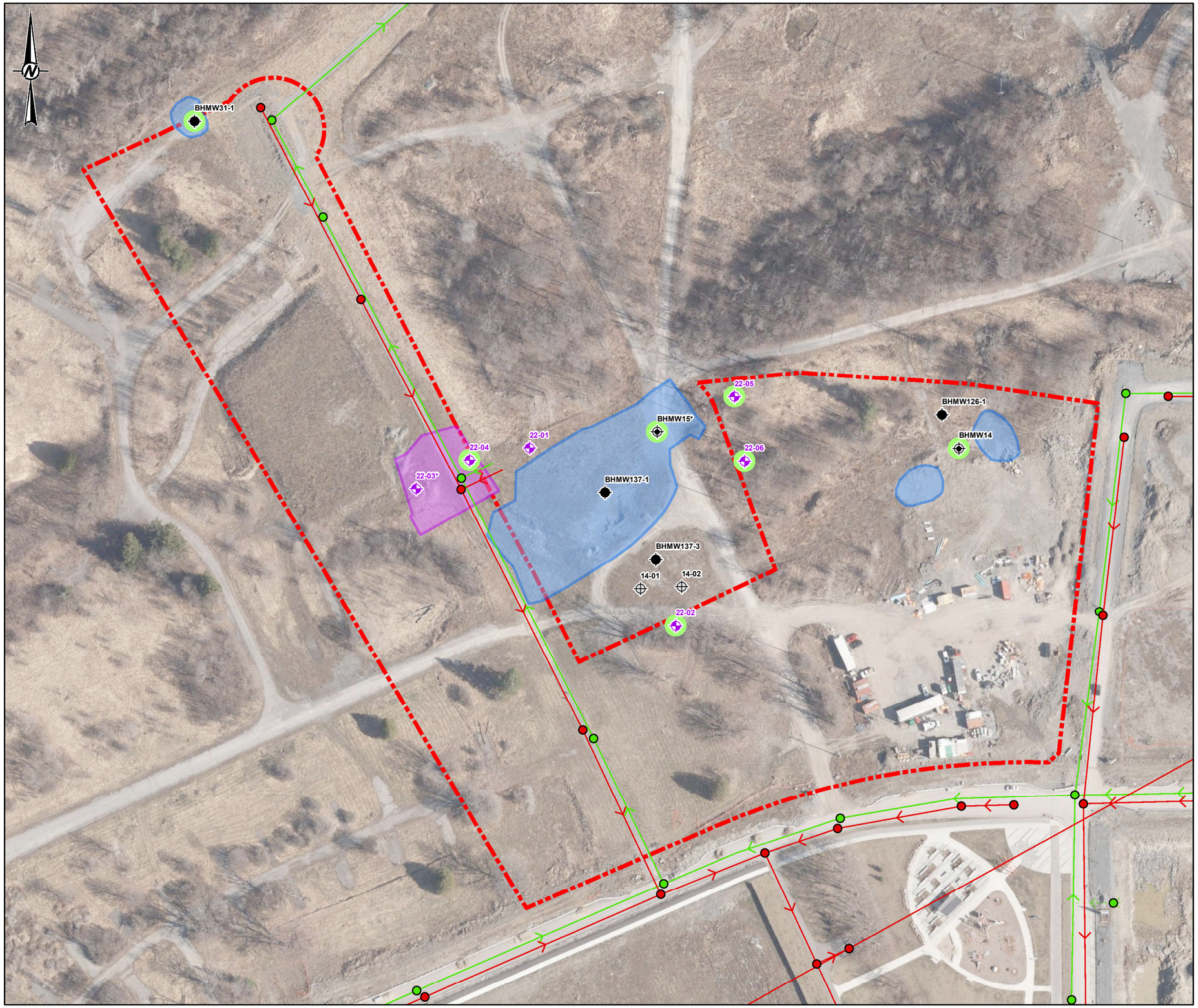

LEGEND

- MONITORING WELL LOCATION (GOLDER, 2022)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- MEETS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

NOTE(S)
1. ALL DATA IN µg/L
2. *MONITORING WELL DECOMMISSIONED AS PART OF REMEDIAL WORK

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60
1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
METALS ANALYSIS AND EXCEEDANCES IN GROUNDWATER

CONSULTANT

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	**3A**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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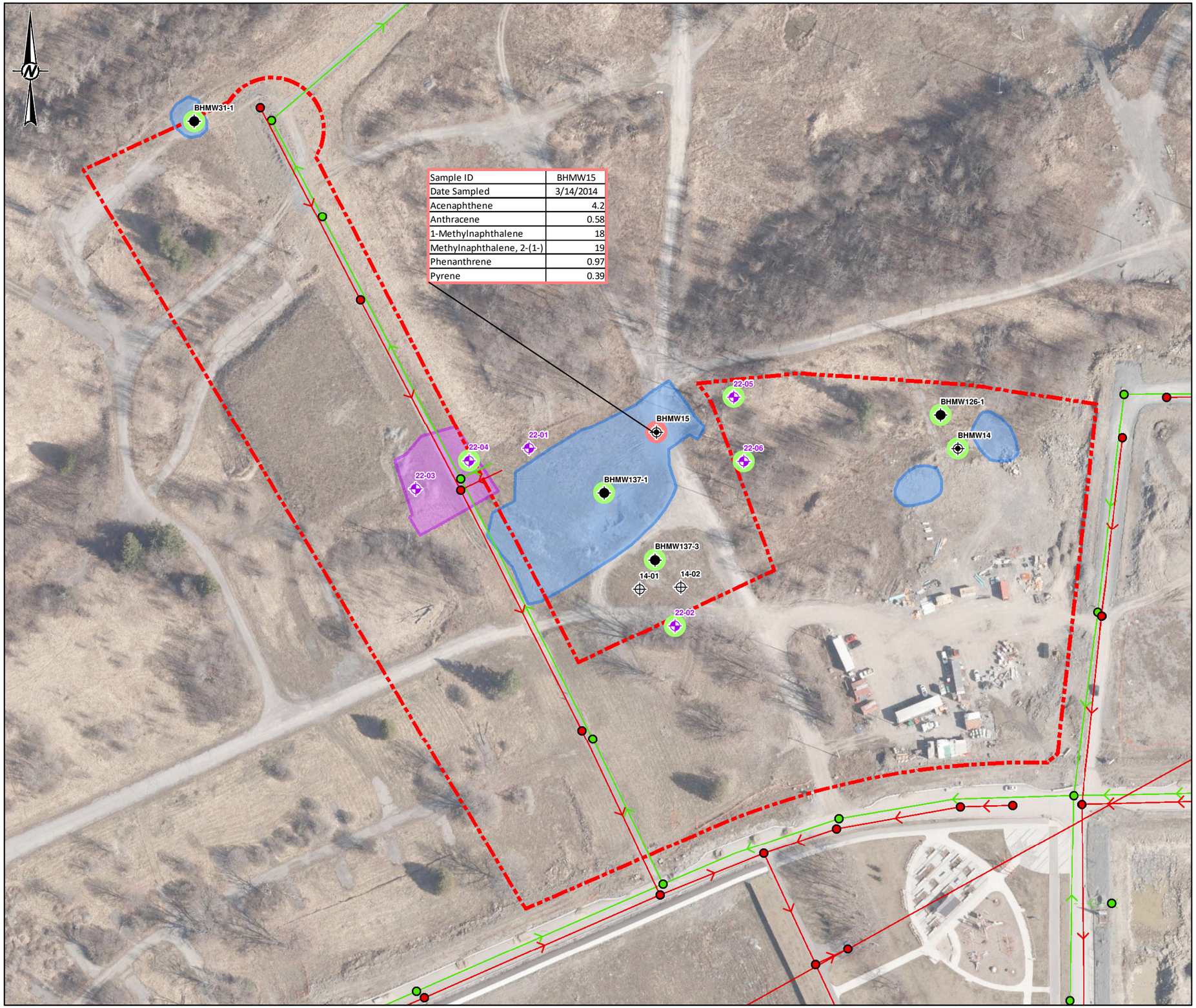

LEGEND

- MONITORING WELL LOCATION (GOLDER, 2022)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- MEETS MECP TABLE 1 STANDARDS
- EXCEEDS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- PHASE TWO PROPERTY AND RSC BOUNDARY

Sample ID	BHMW15
Date Sampled	3/14/2014
Acenaphthene	4.2
Anthracene	0.58
1-Methylnaphthalene	18
Methylnaphthalene, 2-(1-)	19
Phenanthrene	0.97
Pyrene	0.39

EXCEEDANCE REMOVED DURING REMEDIATION

NOTE(S)
1. ALL DATA IN µg/L

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60
1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
PAH ANALYSIS AND EXCEEDANCES IN GROUNDWATER

CONSULTANT

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	**3B**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM:
25mm
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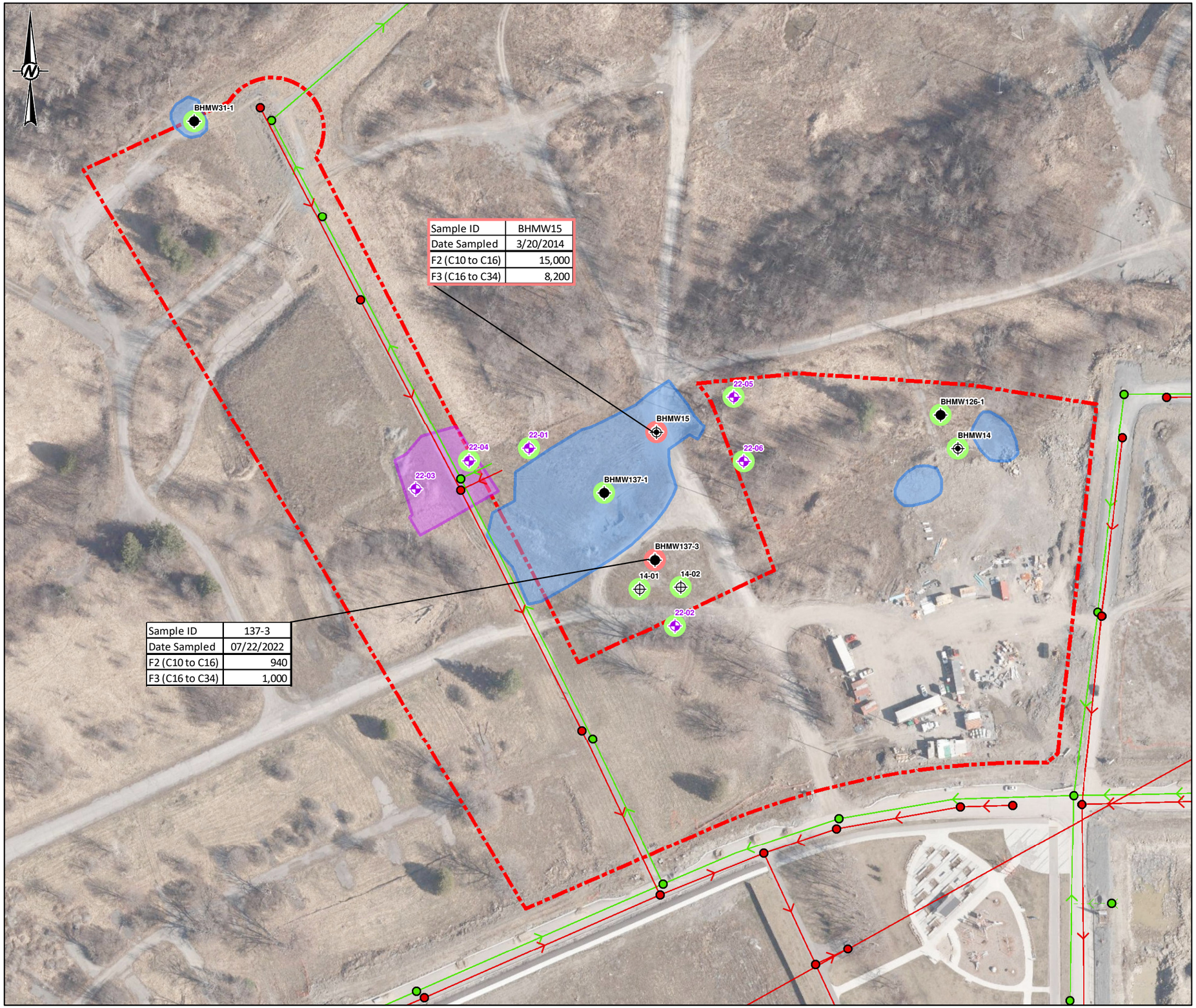

LEGEND

- MONITORING WELL LOCATION (GOLDER, 2022)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- MEETS MECP TABLE 1 STANDARDS
- EXCEEDS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

Sample ID	BHMW15
Date Sampled	3/20/2014
F2 (C10 to C16)	15,000
F3 (C16 to C34)	8,200

EXCEEDANCE REMOVED DURING REMEDIATION

NOTE(S)
1. ALL DATA IN µg/L

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60
1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
PHC ANALYSIS AND EXCEEDANCES IN GROUNDWATER

CONSULTANT

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	**3C**

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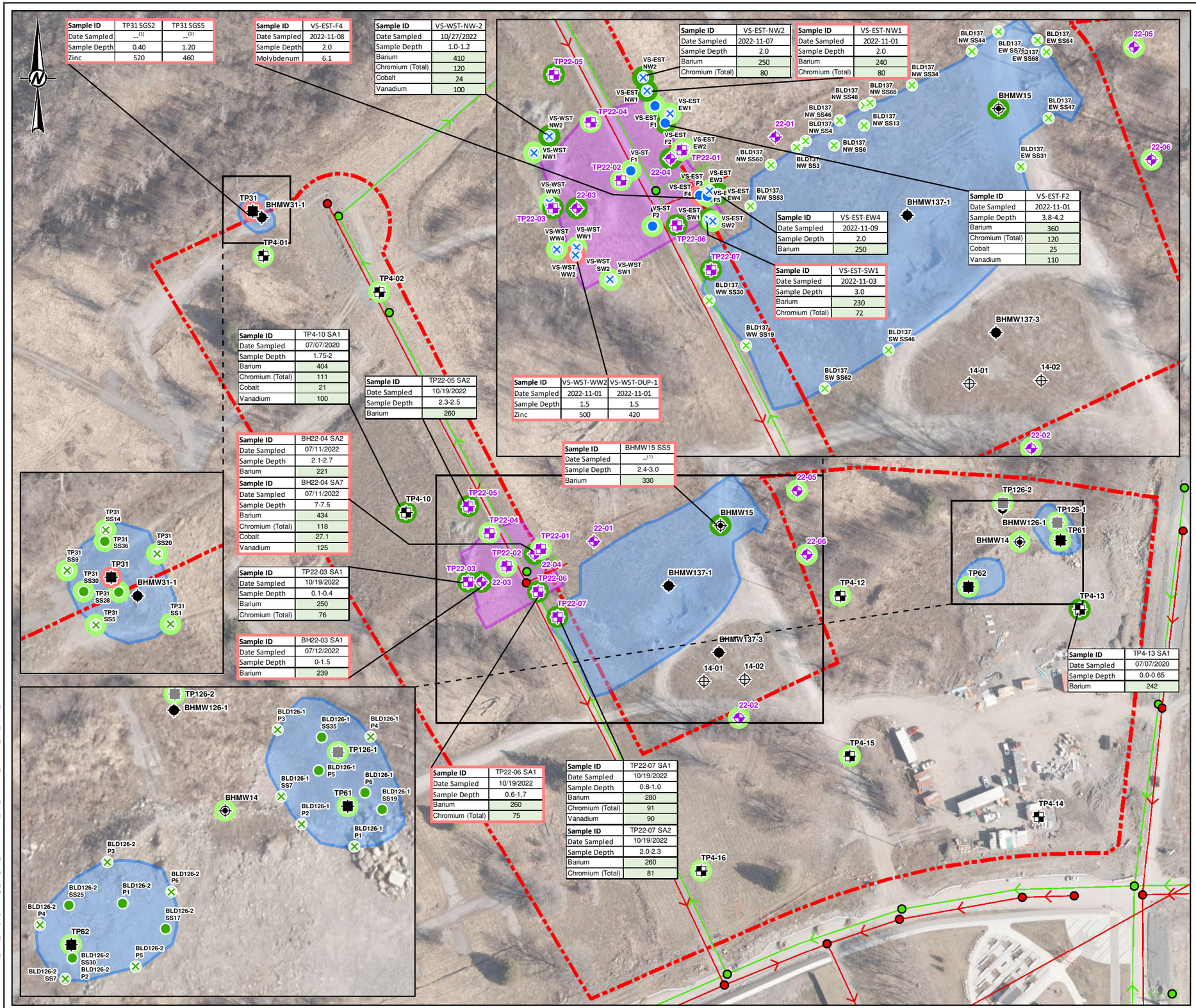

Sample ID	TP31 SGS2	TP31 SGS5
Date Sampled	--[1]	--[1]
Sample Depth	0.40	1.20
Zinc	520	460

Sample ID	VS-EST-F4
Date Sampled	2022-11-08
Sample Depth	2.0
Molybdenum	6.1

Sample ID	VS-WST-NW-2
Date Sampled	10/27/2022
Sample Depth	1.0-1.2
Barium	410
Chromium (Total)	120
Cobalt	24
Vanadium	100

Sample ID	VS-EST-NW2
Date Sampled	2022-11-07
Sample Depth	2.0
Barium	250
Chromium (Total)	80

Sample ID	VS-EST-NW1
Date Sampled	2022-11-01
Sample Depth	2.0
Barium	240
Chromium (Total)	80

Sample ID	VS-EST-F2
Date Sampled	2022-11-01
Sample Depth	3.8-4.2
Barium	360
Chromium (Total)	120
Cobalt	25
Vanadium	110

Sample ID	VS-EST-EW4
Date Sampled	2022-11-09
Sample Depth	2.0
Barium	250

Sample ID	VS-EST-SW1
Date Sampled	2022-11-03
Sample Depth	3.0
Barium	230
Chromium (Total)	72

Sample ID	TP4-10 SA1
Date Sampled	07/07/2020
Sample Depth	1.75-2
Barium	404
Chromium (Total)	111
Cobalt	21
Vanadium	100

Sample ID	TP22-05 SA2
Date Sampled	10/19/2022
Sample Depth	2.3-2.5
Barium	260

Sample ID	VS-WST-WW2	VS-WST-DUP-1
Date Sampled	2022-11-01	2022-11-01
Sample Depth	1.5	1.5
Zinc	500	420

Sample ID	BHMW15 SS5
Date Sampled	--[1]
Sample Depth	2.4-3.0
Barium	330

Sample ID	BH22-04 SA2
Date Sampled	07/11/2022
Sample Depth	2.1-2.7
Barium	221

Sample ID	BH22-04 SA7
Date Sampled	07/11/2022
Sample Depth	7-7.5
Barium	434
Chromium (Total)	118
Cobalt	27.1
Vanadium	125

Sample ID	TP22-03 SA1
Date Sampled	10/19/2022
Sample Depth	0.1-0.4
Barium	250
Chromium (Total)	76

Sample ID	BH22-03 SA1
Date Sampled	07/12/2022
Sample Depth	0-1.5
Barium	239

Sample ID	TP4-13 SA1
Date Sampled	07/07/2020
Sample Depth	0.0-0.65
Barium	242

Sample ID	TP22-06 SA1
Date Sampled	10/19/2022
Sample Depth	0.6-1.7
Barium	260
Chromium (Total)	75

Sample ID	TP22-07 SA1
Date Sampled	10/19/2022
Sample Depth	0.8-1.0
Barium	280
Chromium (Total)	91
Vanadium	90

Sample ID	TP22-07 SA2
Date Sampled	10/19/2022
Sample Depth	2.0-2.3
Barium	260
Chromium (Total)	81

LEGEND

- TEST PIT LOCATION (GOLDER/WSP, 2022)
- MONITORING WELL LOCATION (GOLDER, 2022)
- TEST PIT LOCATION (GOLDER, 2020)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- TEST PIT LOCATION (DST, 2009)
- TEST PIT LOCATION (GREENBANK, 2004)
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- MEETS MECP TABLE 1 STANDARDS
- EXCEEDS MECP TABLE 1 STANDARDS BUT INTERPRETED TO BE NATURALLY OCCURRING
- EXCEEDS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

Sample ID	VS-EST-F4
Date Sampled	2022-11-08
Sample Depth	2.0
Molybdenum	6.1

EXCEEDANCE REMOVED FROM SITE DURING REMEDIATION

NOTE(S)
1. ALL DATA IN µg/g
2. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
3. [1] NO DATE WAS PROVIDED IN THE SOURCE REPORT

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60
1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
METALS ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT
wsp

YYYY-MM-DD	2023-01-20
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	4A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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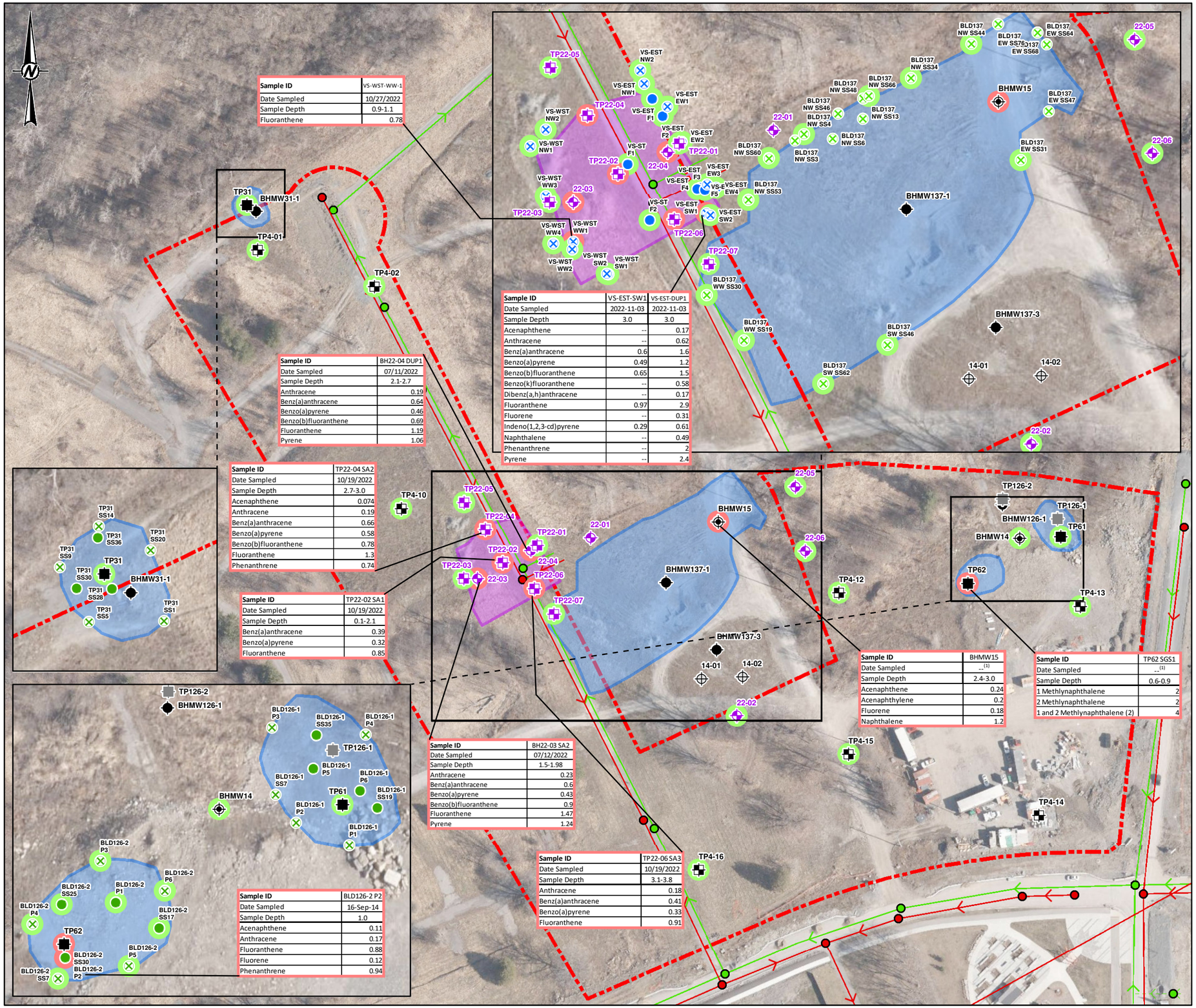

Sample ID	VS-WST-WW-1
Date Sampled	10/27/2022
Sample Depth	0.9-1.1
Fluoranthene	0.78

Sample ID	VS-EST-SW1	VS-EST-DUP1
Date Sampled	2022-11-03	2022-11-03
Sample Depth	3.0	3.0
Acenaphthene	--	0.17
Anthracene	--	0.62
Benz(a)anthracene	0.6	1.6
Benzo(a)pyrene	0.49	1.2
Benzo(b)fluoranthene	0.65	1.5
Benzo(k)fluoranthene	--	0.58
Dibenz(a,h)anthracene	--	0.17
Fluoranthene	0.97	2.9
Fluorene	--	0.31
Indeno(1,2,3-cd)pyrene	0.29	0.61
Naphthalene	--	0.49
Phenanthrene	--	2
Pyrene	--	2.4

Sample ID	BH22-04 DUP1
Date Sampled	07/11/2022
Sample Depth	2.1-2.7
Anthracene	0.19
Benz(a)anthracene	0.64
Benzo(a)pyrene	0.46
Benzo(b)fluoranthene	0.69
Fluoranthene	1.19
Pyrene	1.06

Sample ID	TP22-04 SA2
Date Sampled	10/19/2022
Sample Depth	2.7-3.0
Acenaphthene	0.074
Anthracene	0.19
Benz(a)anthracene	0.66
Benzo(a)pyrene	0.58
Benzo(b)fluoranthene	0.78
Fluoranthene	1.3
Phenanthrene	0.74

Sample ID	TP22-02 SA1
Date Sampled	10/19/2022
Sample Depth	0.1-2.1
Benz(a)anthracene	0.39
Benzo(a)pyrene	0.32
Fluoranthene	0.85

Sample ID	BH22-03 SA2
Date Sampled	07/12/2022
Sample Depth	1.5-1.98
Anthracene	0.23
Benz(a)anthracene	0.6
Benzo(a)pyrene	0.43
Benzo(b)fluoranthene	0.9
Fluoranthene	1.47
Pyrene	1.24

Sample ID	TP22-06 SA3
Date Sampled	10/19/2022
Sample Depth	3.1-3.8
Anthracene	0.18
Benz(a)anthracene	0.41
Benzo(a)pyrene	0.33
Fluoranthene	0.91

Sample ID	BHMW15
Date Sampled	--(1)
Sample Depth	2.4-3.0
Acenaphthene	0.24
Acenaphthylene	0.2
Fluorene	0.18
Naphthalene	1.2

Sample ID	TP62 SGS1
Date Sampled	--(1)
Sample Depth	0.6-0.9
1 Methlynaphthalene	2
2 Methlynaphthalene	2
1 and 2 Methlynaphthalene (2)	4

Sample ID	BLD126-2 P2
Date Sampled	16-Sep-14
Sample Depth	1.0
Acenaphthene	0.11
Anthracene	0.17
Fluoranthene	0.88
Fluorene	0.12
Phenanthrene	0.94

LEGEND

- TEST PIT LOCATION (GOLDER/WSP, 2022)
- MONITORING WELL LOCATION (GOLDER, 2022)
- TEST PIT LOCATION (GOLDER, 2020)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- TEST PIT LOCATION (DST, 2009)
- TEST PIT LOCATION (GREENBANK, 2004)
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- MEETS MECP TABLE 1 STANDARDS
- EXCEEDS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

Sample ID	VS-WST-WW-1
Date Sampled	10/27/2022
Sample Depth	0.9-1.1
Fluoranthene	0.78

EXCEEDANCE REMOVED FROM SITE DURING REMEDIATION

NOTE(S)
1. ALL DATA IN µg/g
2. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
3. (1) NO DATE WAS PROVIDED IN THE SOURCE REPORT

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60
1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
PAH ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT
wsp

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	4B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

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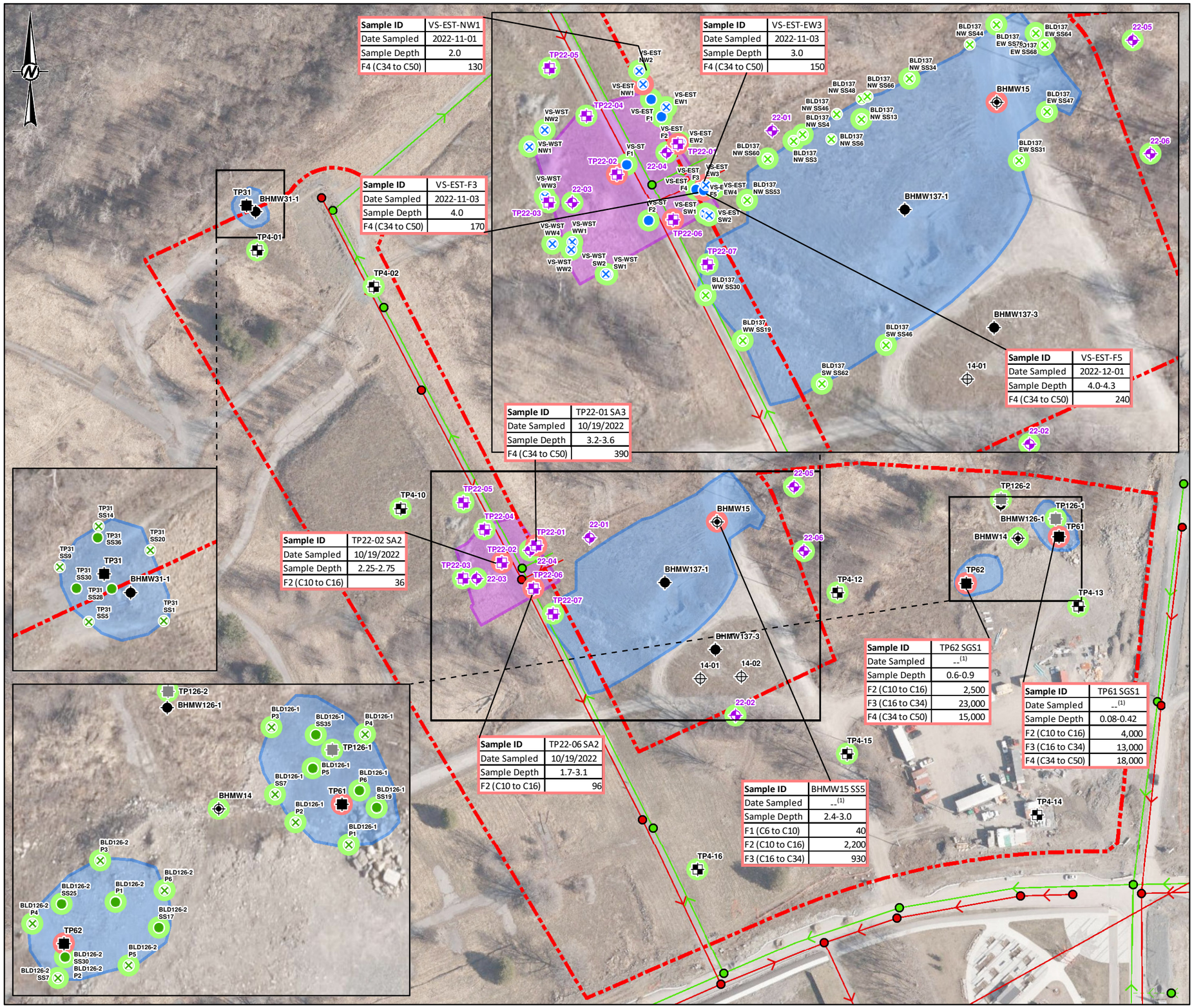

LEGEND

- TEST PIT LOCATION (GOLDER/WSP, 2022)
- MONITORING WELL LOCATION (GOLDER, 2022)
- TEST PIT LOCATION (GOLDER, 2020)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- TEST PIT LOCATION (DST, 2009)
- TEST PIT LOCATION (GREENBANK, 2004)
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- MEETS MECP TABLE 1 STANDARDS
- EXCEEDS MECP TABLE 1 STANDARDS
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

Sample ID	VS-EST-NW1
Date Sampled	2022-11-01
Sample Depth	2.0
F4 (C34 to C50)	130

EXCEEDANCE REMOVED FROM SITE DURING REMEDIATION

NOTE(S)
1. ALL DATA IN µg/g
2. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
3. (1) NO DATE WAS PROVIDED IN THE SOURCE REPORT

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 MTM 9

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
PHC ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	4C

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 28mm

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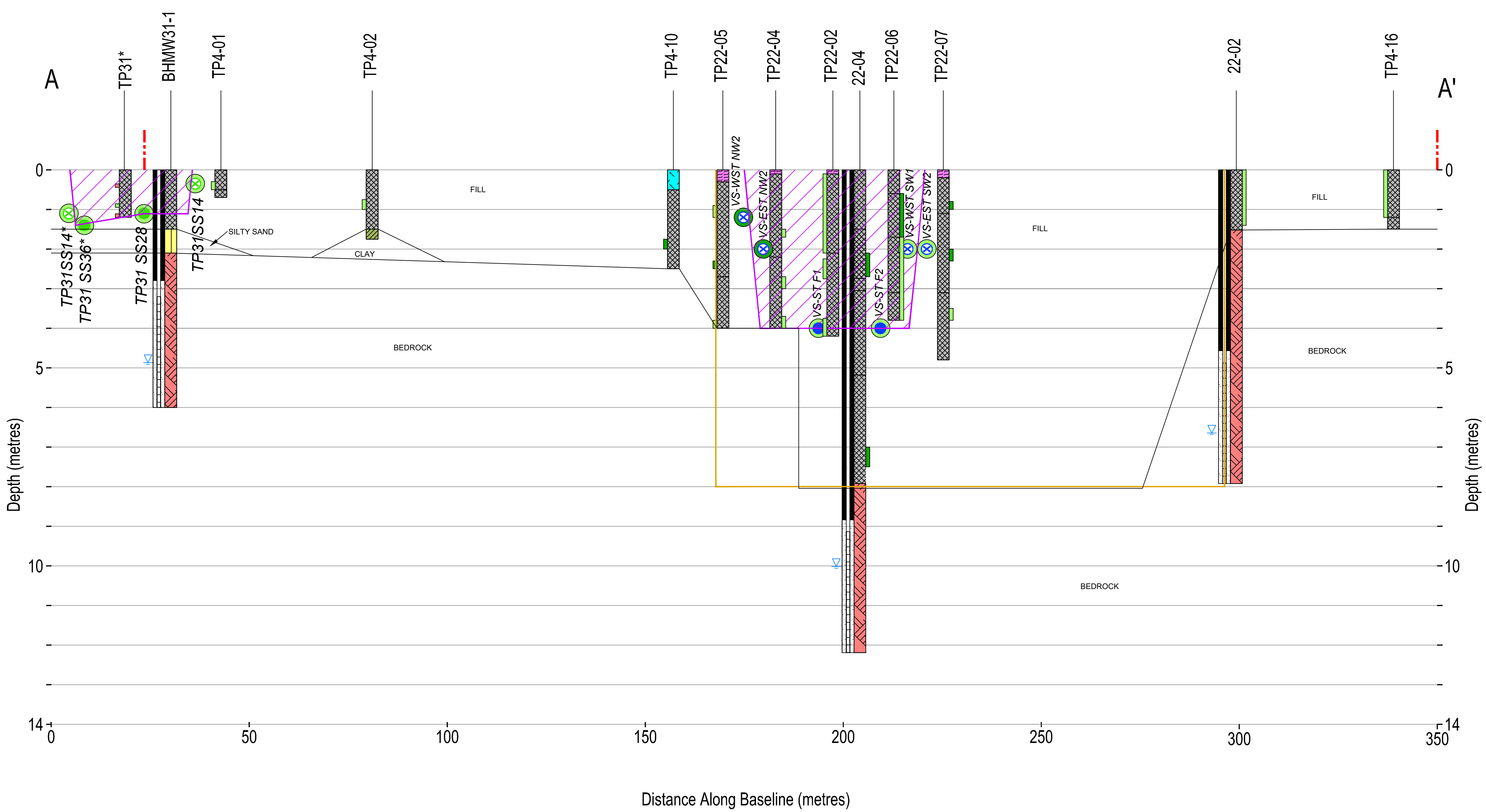


LEGEND

- BOREHOLE/MONITORING IDENTIFIER — 20-01
- GROUNDWATER LEVEL
- STRATIGRAPHY
- WELL SCREEN
- PHASE TWO PROPERTY AND RSC BOUNDARY
- SEWER TRENCH
- TOPSOIL
- CLAY
- SAND and GRAVEL
- BEDROCK
- FILL
- SILTY SAND
- SAMPLE MEETS MECP TABLE 1 STANDARDS
- SAMPLE EXCEEDS MECP TABLE 1 STANDARDS BUT INTERPRETED TO BE NATURALLY OCCURRING
- SAMPLE EXCEEDS MECP TABLE 1 STANDARDS
- AREA OF REMEDIAL EXCAVATION
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.
5. *OFF-SITE DATA INCLUDED FOR REFERENCE PURPOSES ONLY

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,250 HORIZONTAL METRES

CLIENT
CLC LIMITED

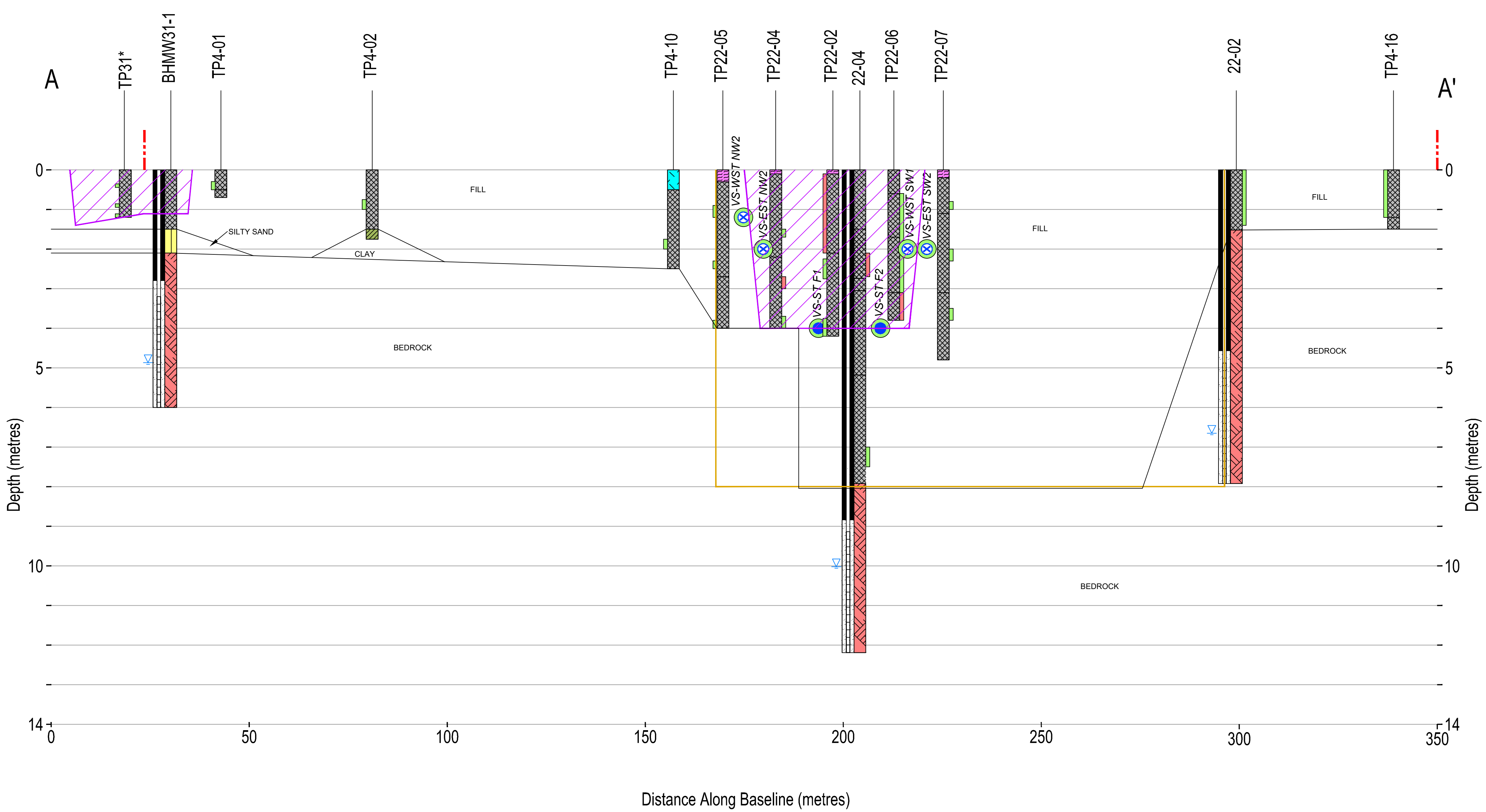
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION A-A' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH METALS ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	5A



LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01

GROUNDWATER LEVEL

STRATIGRAPHY

WELL SCREEN

PHASE TWO PROPERTY AND RSC BOUNDARY

SEWER TRENCH

TOPSOIL

CLAY

SAND and GRAVEL

BEDROCK

FILL

SILTY SAND

SAMPLE MEETS MECP TABLE 1 STANDARDS

SAMPLE EXCEEDS MECP TABLE 1 STANDARDS

AREA OF REMEDIAL EXCAVATION

FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION

WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.
5. *OFF-SITE DATA INCLUDED FOR REFERENCE PURPOSES ONLY

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,250 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

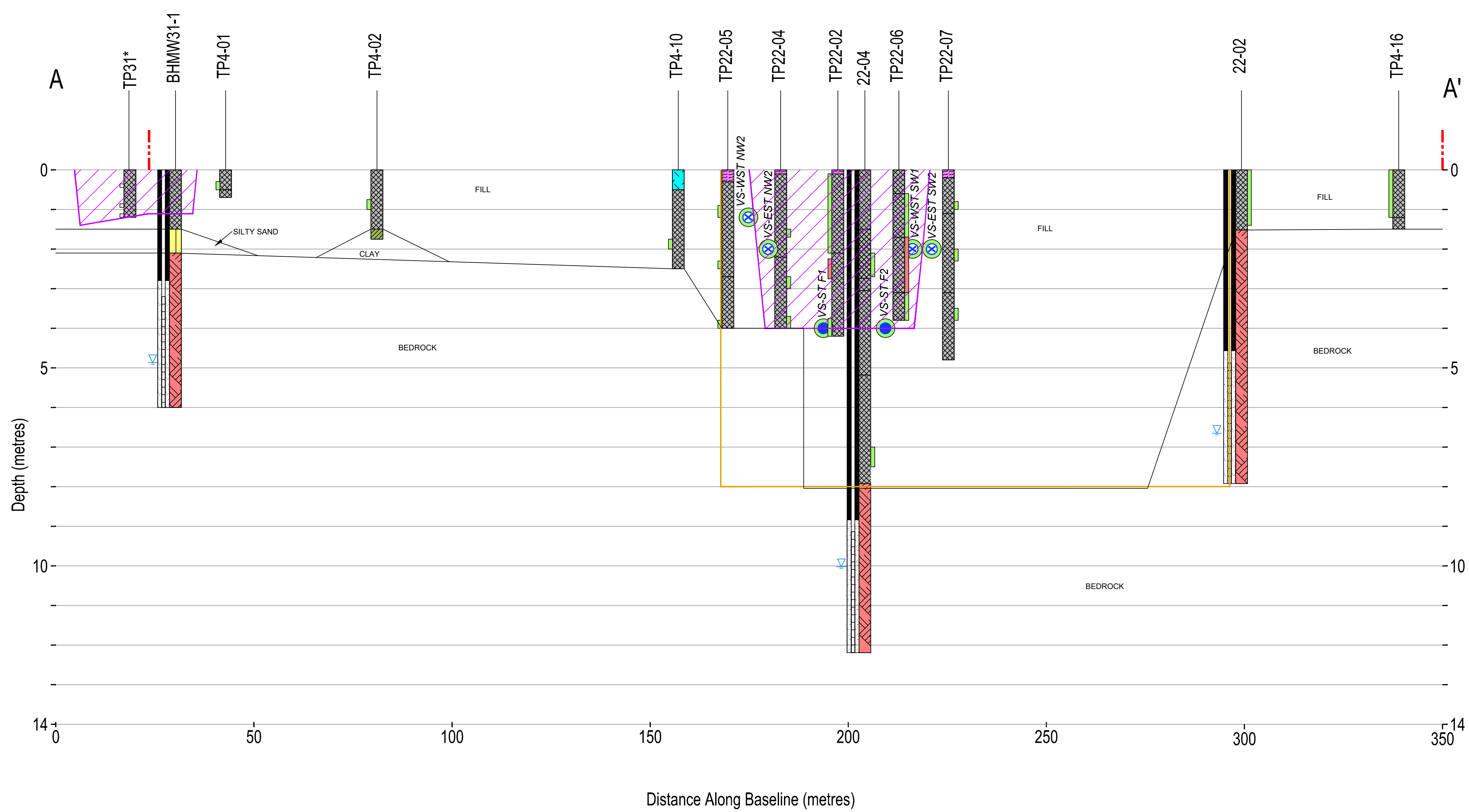
TITLE
CROSS-SECTION A-A' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PAH ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	5B



LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01
GROUNDWATER LEVEL
STRATIGRAPHY
WELL SCREEN

- PHASE TWO PROPERTY AND RSC BOUNDARY
- SEWER TRENCH
- TOPSOIL
- CLAY
- SAND and GRAVEL
- BEDROCK
- FILL
- SILTY SAND
- SAMPLE MEETS MECP TABLE 1 STANDARDS
- SAMPLE EXCEEDS MECP TABLE 1 STANDARDS
- AREA OF REMEDIAL EXCAVATION
- FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.
5. *OFF-SITE DATA INCLUDED FOR REFERENCE PURPOSES ONLY

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,250 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

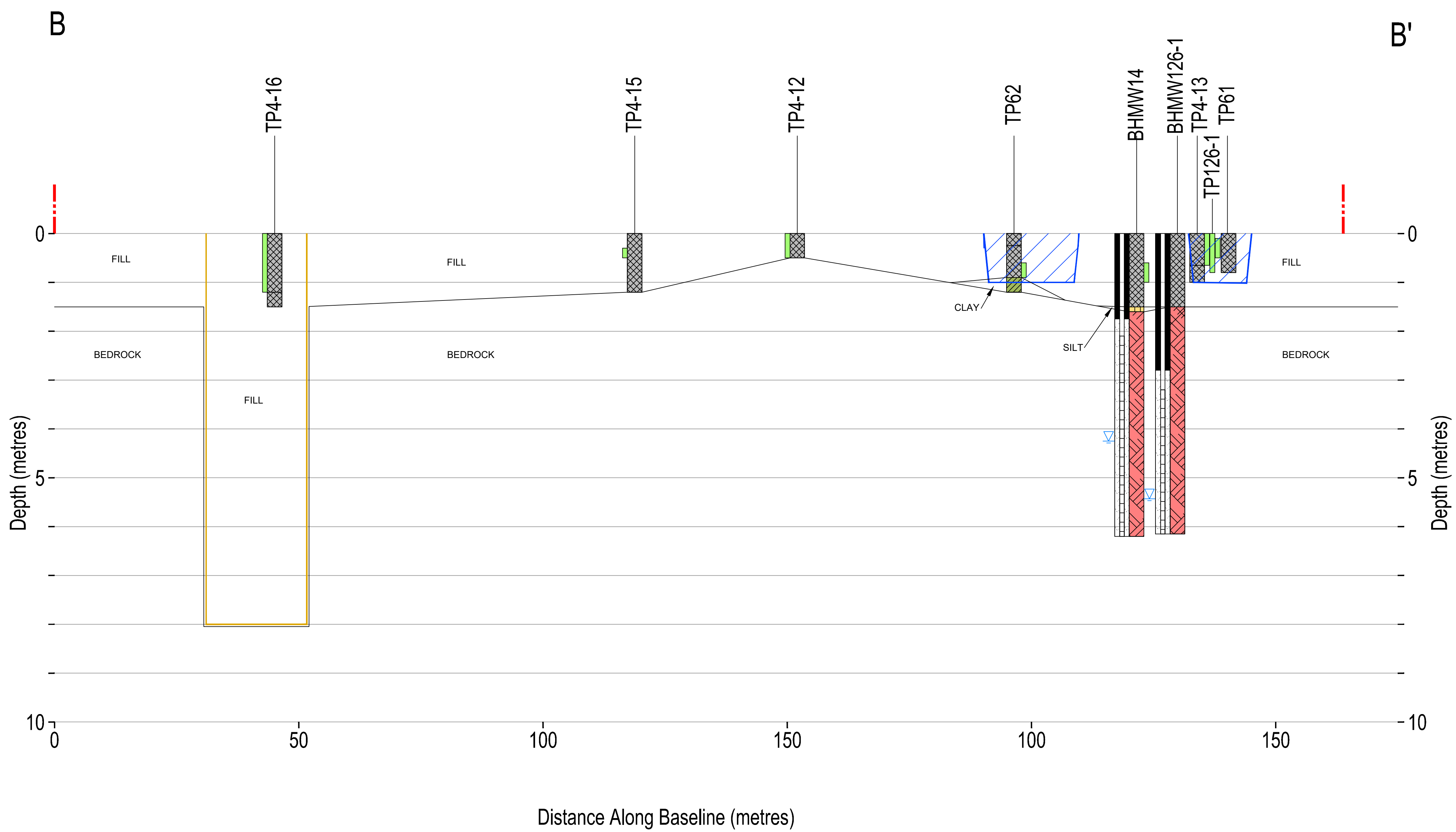
TITLE
CROSS-SECTION A-A' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PHC ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	5C



LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01

GROUNDWATER LEVEL

STRATIGRAPHY

WELL SCREEN

PHASE TWO PROPERTY AND RSC BOUNDARY

SEWER TRENCH

BEDROCK

FILL

SILT

CLAY

SAMPLE MEETS MECP TABLE 1 STANDARDS

SAMPLE EXCEEDS MECP TABLE 1 STANDARDS

AREA OF REMEDIAL EXCAVATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

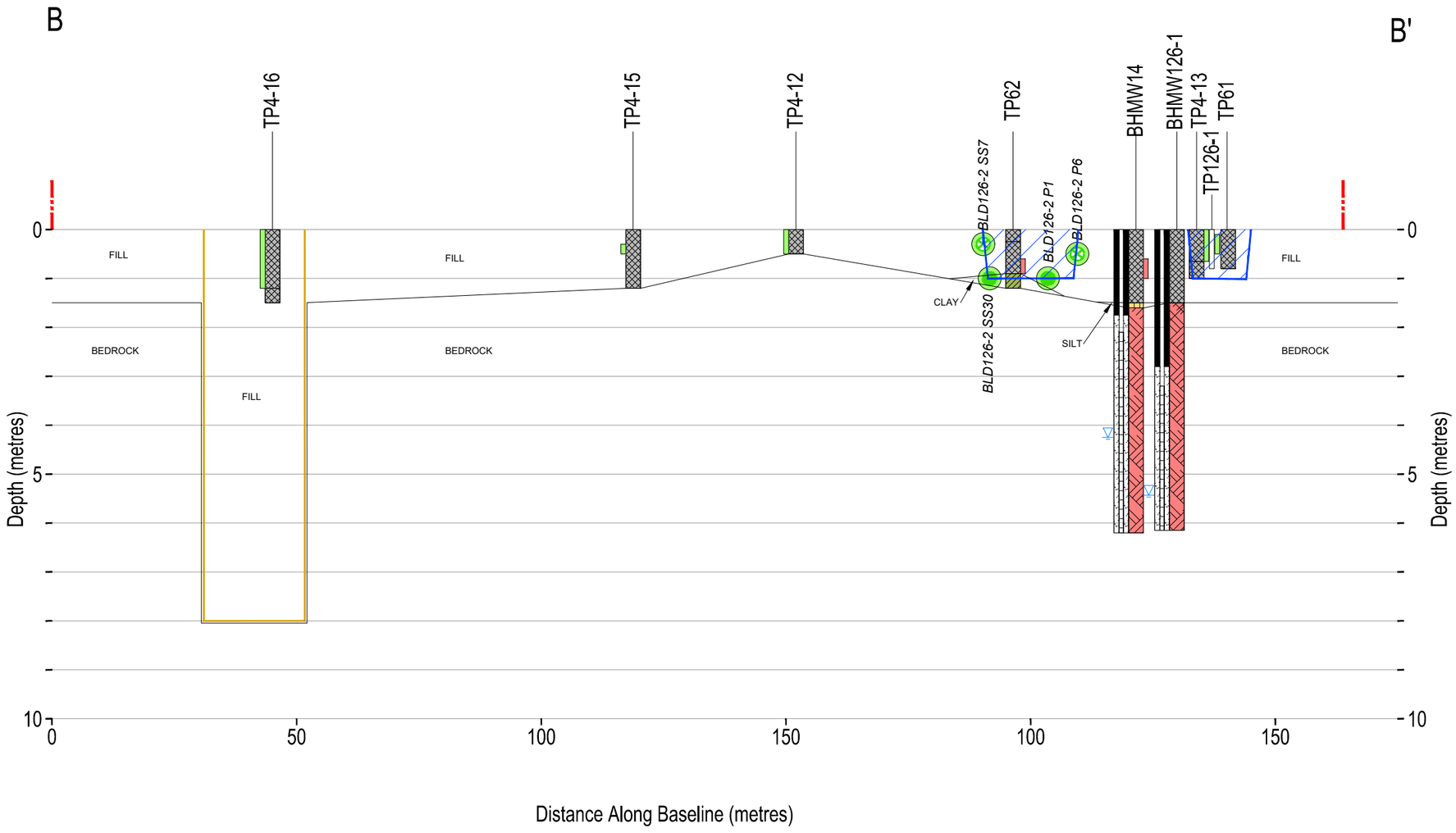
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH METALS ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	6A



LEGEND

- BOREHOLE/MONITORING IDENTIFIER — 20-01
- GROUNDWATER LEVEL
- STRATIGRAPHY
- WELL SCREEN
- PHASE TWO PROPERTY AND RSC BOUNDARY
- SEWER TRENCH
- BEDROCK
- FILL
- SILT
- CLAY
- SAMPLE MEETS MECP TABLE 1 STANDARDS
- SAMPLE EXCEEDS MECP TABLE 1 STANDARDS
- AREA OF REMEDIAL EXCAVATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PAH ANALYSIS AND EXCEEDANCES IN SOIL

CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	6B

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

25 mm

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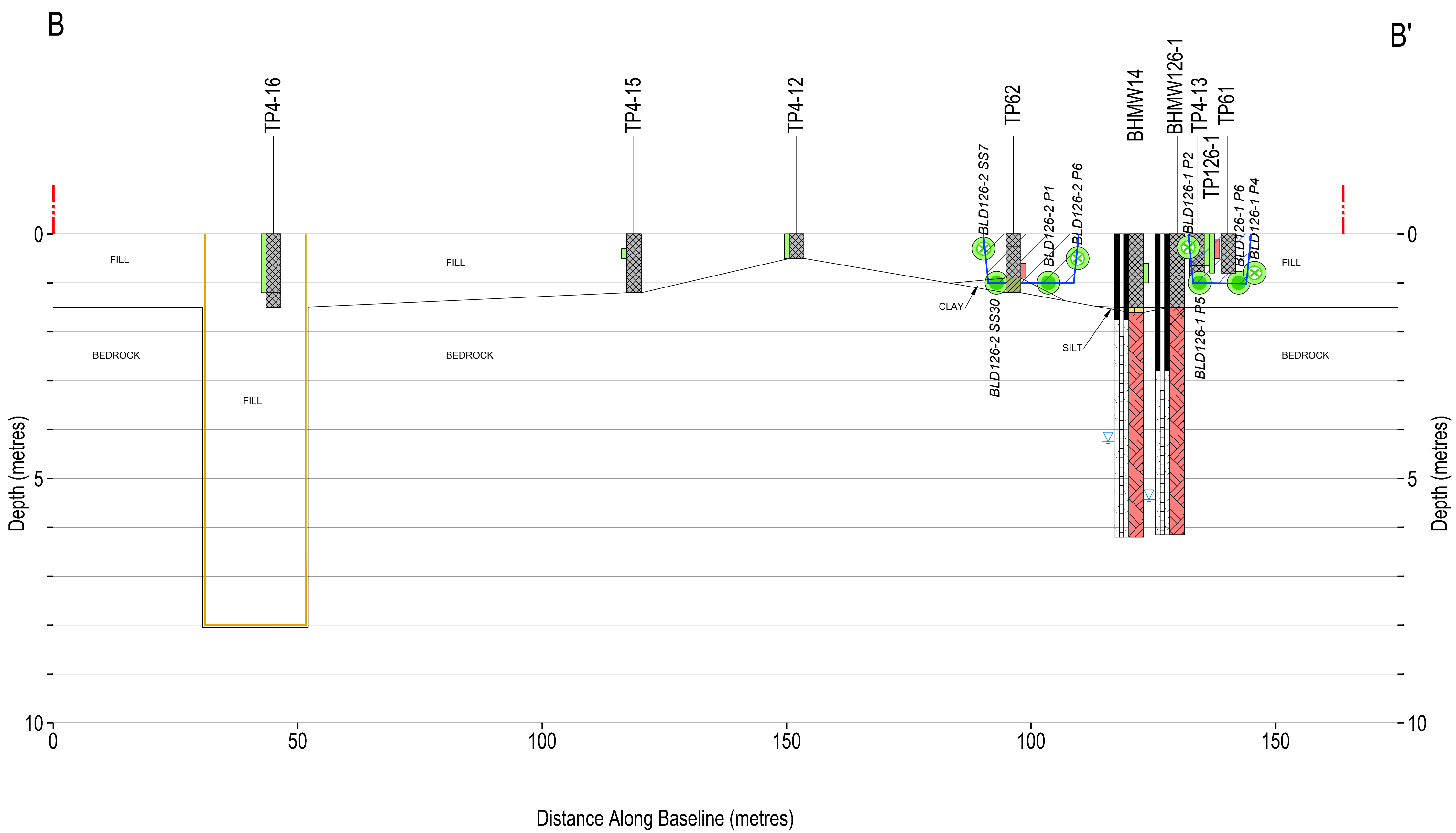


LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01

GROUNDWATER LEVEL

STRATIGRAPHY

WELL SCREEN

PHASE TWO PROPERTY AND RSC BOUNDARY

SEWER TRENCH

BEDROCK

FILL

SILT

CLAY

SAMPLE MEETS MECP TABLE 1 STANDARDS

SAMPLE EXCEEDS MECP TABLE 1 STANDARDS

AREA OF REMEDIAL EXCAVATION

FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION B-B' (INTERPRETED GEOLOGICAL AND HYDROGEOLOGICAL CONDITIONS) WITH PHC ANALYSIS AND EXCEEDANCES IN SOIL

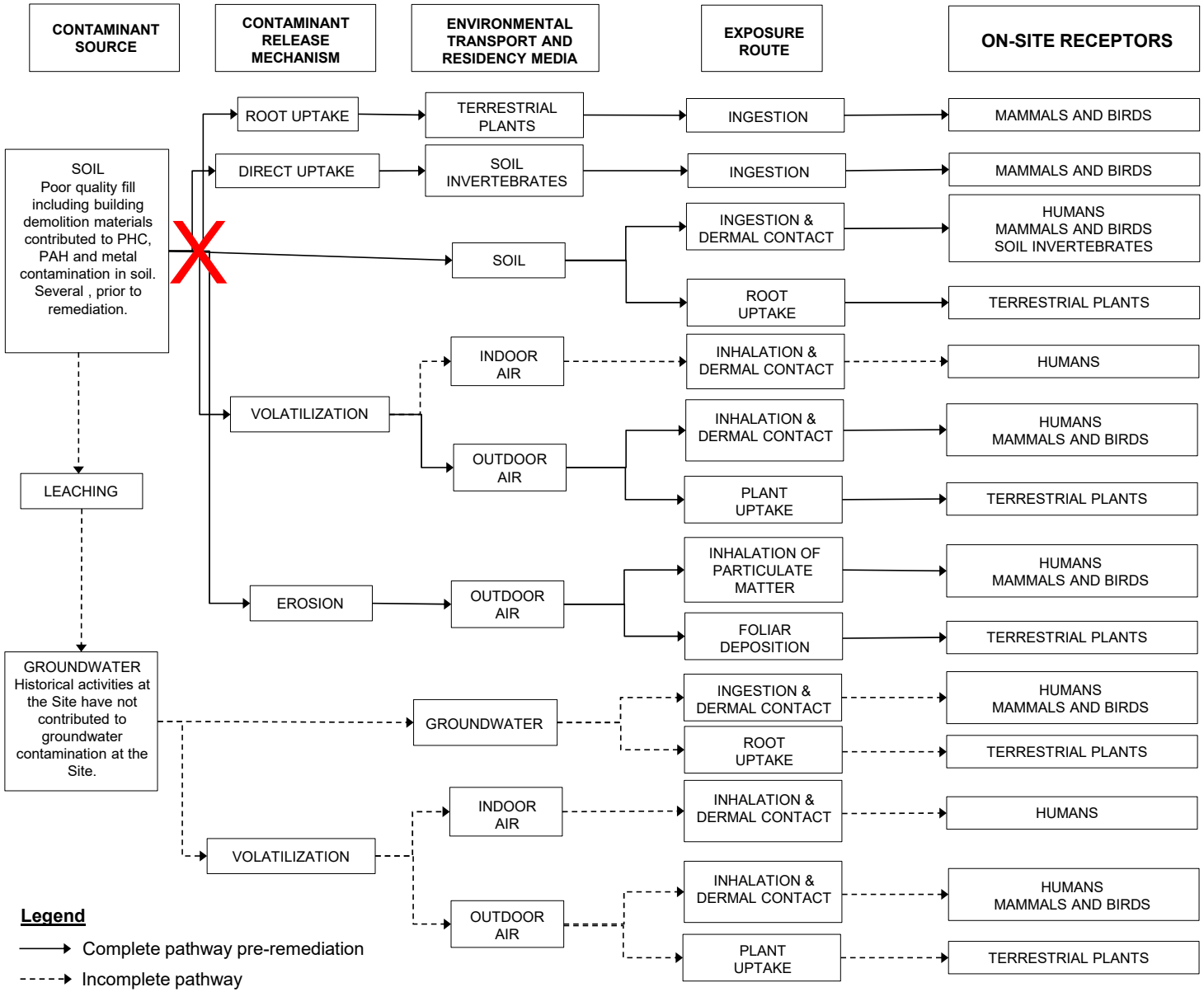
CONSULTANT
WSP GOLDER

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	6C

Potential Receptor Pathways, RSC , Phase 4 Wateridge Village, Ottawa, Ontario

FIGURE 7



Notes:

1. This diagram indicates all potential pathways which were considered to have the potential to result in exposure of contaminants by receptors at the Site pre-remediation.
2. Remediation at the Site consisted of the excavation of contaminated soil.
3. Post-remediation all soil related pathways are considered to be incomplete given that contaminated soil is no longer present at the Site, denoted by the "X".

Date: January 2023

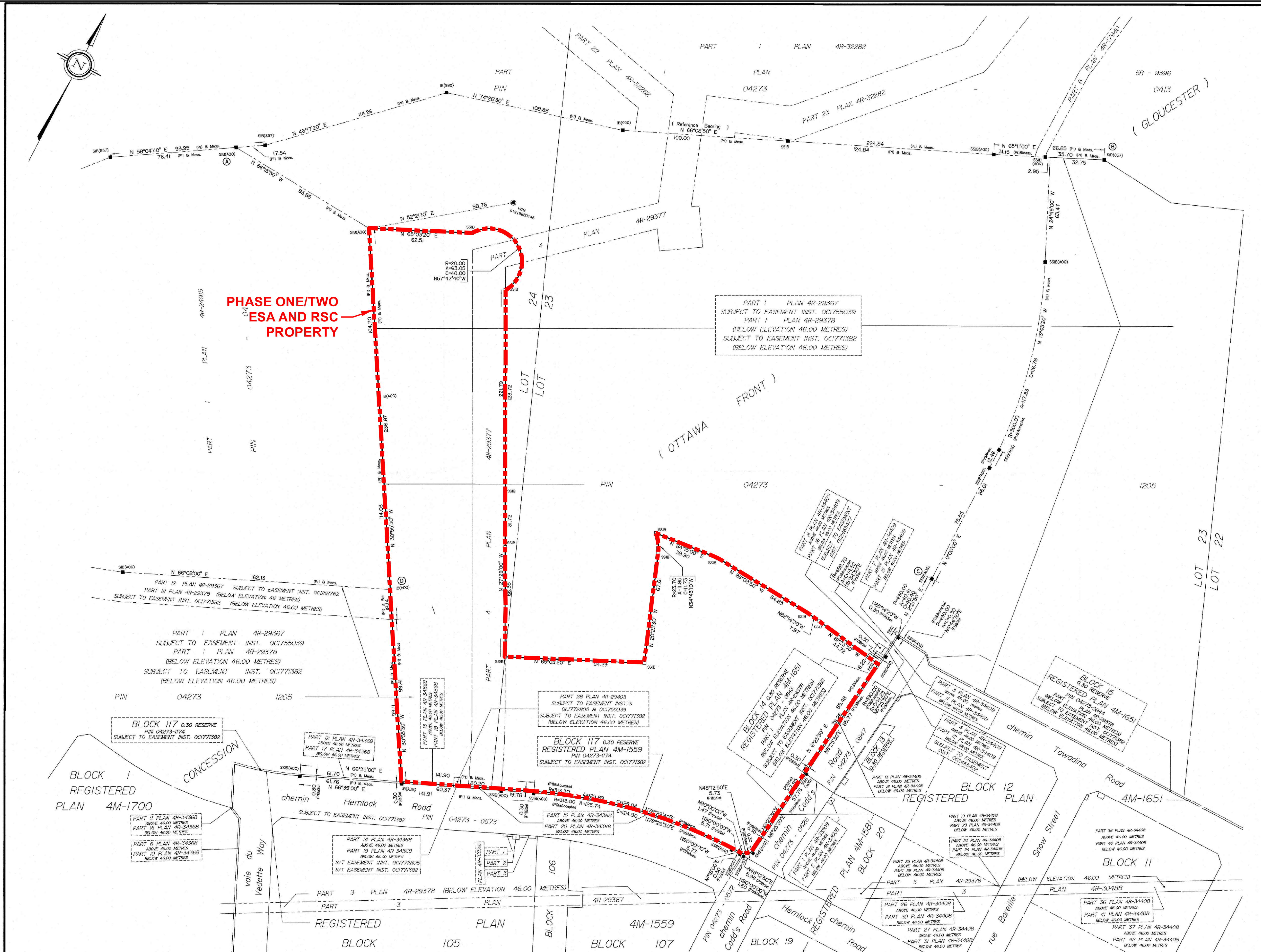
Project Number: 19124906

CAD: SAC

CKD: TL

APPENDIX A

Survey Plan



PLAN OF SURVEY OF
Part of **PIN 04273-1205**, Being
PART OF LOTS 23 and **24**
CONCESSION 1 (OTTAWA FRONT)
Geographic Township of Gloucester
CITY OF OTTAWA
Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Scale 1 : 1000

40 30 20 10 0 20 40 Metres

Metric

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act and the Surveyors Act and the regulations made under them.
2. The survey was completed on the 13th day of October 2022.

October 13, 2022 — Date

A. J. Broxham — Andrew J. Broxham, Ontario Land Surveyor

Notes & Legend

—□—	Denotes	Survey Monument Planted
—■—	"	Survey Monument Found
SIB	"	Standard Iron Bar
SSIB	"	Short Standard Iron Bar
IB	"	Iron Bar
HCM	"	Horizontal Control Monument
(WIT)	"	Witness
(AOG)	"	Annis, O'Sullivan, Vollebekk Ltd.
Meas.	"	Measured
(P1)	"	(AOG) Plan, September 27, 2021

Site Area = 4.890 Hectares

Distances shown on this plan are ground distances and can be converted to grid distances by multiplying by the combined scale factor of 0.999947.

Bearings are grid, derived from part of the northerly limit of Plan 4R-29378, shown to be N 66°08'50" E thereon and are referred to the Central Meridian of MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinates are derived from Can-Net 2016 Real Time Network GPS observations referenced to Specified Control Points 01919680105 and 01918434761, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).

Coordinate values are to urban accuracy in accordance with O. Reg. 216/10.

. 01919680105	Northing	5024915.16	Easting	373971.65
. 019198434761	Northing	5036178.12	Easting	372436.11
. Point A	Northing	5035408.34	Easting	372044.89
. Point B	Northing	5035644.74	Easting	372513.57
. Point C	Northing	5035371.94	Easting	372538.18
. Point D	Northing	5035214.58	Easting	372250.94

Caution: Coordinates cannot, in themselves, be used to re-establish corners or boundaries shown on this plan.

Elevation Note:

1. Elevations are geodetic, referred to City of Ottawa Vertical Bench Mark No. 396 (01919680138), having an elevation of 95.06 metres.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-36284

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR IN ACCORDANCE WITH Regulation 1026, Section 29 (3)

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 21181-20 CLC Pt Lts 22-24 Cl OF GL POS Ph4 F | N

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM

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APPENDIX B

Sampling and Analysis Plan

SAMPLING AND ANALYSIS PLAN

DATE June 2022 **Project No.** 19124906

REVIEWED BY Keith Holmes, PGeo

CC Anthony Lyon, PEng

PREPARED BY Shihan Chowdhury, PEng

SAMPLING AND ANALYSIS PLAN, PHASE 4-1, WATERIDGE VILLAGE DEVELOPMENT
OTTAWA, ONTARIO

Objective

The intent of the current investigation is to further characterize the lateral and vertical extent of soil and groundwater impacts at the property.

Site Background

Surficial geology consists of fill overlying a native overburden consisting of sands, silts and clays. Bedrock was encountered at an average depth of 2 m bgs.

Shallow groundwater in the vicinity of the south property boundary is anticipated to flow north and is encountered between approximately 2.4 and 4.3 m of ground surface. The contaminants of potential concern are petroleum hydrocarbons (“PHCs”) and benzene, toluene, ethylbenzene and xylene (“BTEX”), polycyclic aromatic hydrocarbons (PAHs), and metals.

Site Access Requirements

Access Concern	Information
Site Contact	Katherine Constantine – CLC Phone: 613-668-4300
Access	Montreal Road to Codd’s Road
Hours of Work	No restrictions
Site Check-in Procedure	Check in with Shihan Chowdhury at the start and end of day; Secondary check-in Anthony Lyon at start and end of day, as needed.
Photography	No restrictions
On-Site Orientation or Training	None required

WSP Canada Inc.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada
T: +1 613 592 9600 F: +1 613 592 9601

Drilling Program

- A total of five boreholes will be advanced and installed with monitoring wells. Two soil samples from each of these locations will be submitted for laboratory analysis.
- One soil sample will be collected in the fill material as described in Table 2. A second, deeper sample will be collected in encountered native material and submitted for analysis as needed (to establish a vertical delineation).
- Additional soil samples will be warranted by field observations.

Table 1: Borehole Location and Soil Sampling Plan

Location	Borehole ID	Depth (m bgs)	Soil Samples	Duplicate Sample
North-central portion of the Site	22-02	Approx. 8.0	2 x PHC, BTEX, PAHs, and metals (one for fill and one for native)	1 x PHC, BTEX, PAHs, and metals
Northwest portion of the Site	22-03	Approx. 10.0	2 x PHC, BTEX, PAHs, and metals (one for fill and one for native)	
Northwest portion of the Site	22-04	Approx. 10.0	2 x PHC, BTEX, PAHs, and metals (one for fill and one for native)	
Center of Site (Bldg.16)	22-05	Approx. 12.0	2 x PHC, BTEX, PAHs, and metals (one for fill and one for native)	
Northeast of the Site (Bldg.140)	22-06	Approx. 12.0	2 x PHC, BTEX, PAHs, and metals (one for fill and one for native)	

Groundwater Monitoring

- A round of water level measurements using the water level meter will be collected before purging or sampling any wells.
- Collect groundwater samples from all 5 monitoring wells for the parameters in Table 3 below. Allow the water level to stabilize in the monitoring well before starting measurement of field parameters.

Table 2: Groundwater Sampling Plan

Borehole ID	Field Parameter Measurements	Groundwater Analyses to be Requested	QA/QC samples
22-02, 22-03, 22-04, 22-05, and 22-06	pH; EC; temp; DO; ORP, conductivity	PHCs, BTEX, PAHs, and metals	Trip blank for VOCs

Surveying

- Surveyor to survey horizontal and vertical locations at new monitoring wells and select locations not previously surveyed (ground surface and top of pipe elevations). Top of pipe elevation to be measured at the reference point (notch cut into well pipe).

Chain-of-Custody

Chain-of-Custody Item	Information
Analytical Laboratory	AGAT
Generic Site Condition Standards	Table 1 Residential, Coarse textured soil
Use Record of Site Condition analytical procedures?	Yes
Turn-around Time	Rush
Golder Reporting Contact	Project Director
Project-Specific Quote Number (if applicable)	None
Golder Billing Contact	Keith Holmes (KHolmes@Golder.com)
Is an EQuiS EDD Required?	Yes

Management of Investigation Derived Waste

- Keep waste soil and water segregated into separate drums.
- Label drums for waste management purposes, include Golder Associates, project number, date and drum contents (soil, purge water).
- Discuss best location to store drums with on-Site demolition supervisor (should be secure as possible from public access).

Special Instructions

- Check in with Shihan at start and end of each day.

APPENDIX C

Record of Test Pits

Location	Date	Soil Unit	Sample Name	Sample Depth (mbgs)	Description
TP4-01	07/07/2020	Fill (0.0-0.5 mbgs)	SA1	0.3-0.5	FILL - Sandy silt with gravel and angular boulders; dark grey brown
		Fill (0.5-0.7 mbgs)	SA2	0.5-0.7	FILL - Sandy silt with gravel and angular boulders; light yellowish brown
		Bedrock (0.7 mbgs)	--	--	BEDROCK - Refusal on limestone or sandstone at 0.7 mbgs.
TP4-02	07/07/2020	Fill (0.0-1.5 mbgs)	SA1	0.75-1.00	FILL - Sandy silt with large cobbles, boulders (angular) and gravel; dark to medium brown.
		Native clay (1.5 - 1.75 mbgs)	--	--	CLAY - Native clay at ~1.5 m; no debris noted.
TP4-03	07/07/2020	Fill (0.0-0.8 mbgs)	SA1	0.60-0.80	FILL - Silt with some clay and gravel; medium grey brown.
		Fill (0.8-1.2 mbgs)	SA2	1.0	FILL - Silty sand; weathered orangey brown with some inclusions or clasts.
		Fill (1.2-1.8)	--	--	FILL - Sandy with some inclusions and/or light and dark weathered clasts; light yellowish grey brown.
		Bedrock (1.75-1.80 mbgs)	--	--	BEDROCK - Refusal between 1.75-1.80 mbgs.
TP4-04	07/07/2020	Fill (0.0-0.5 mbgs)	SA1	0-0.5	FILL - Sand with some silt and trace gravel (sub-angular to angular); dark greyish brown.
		Fill (0.5-0.8 mbgs)	SA2	0.5-0.8	FILL - Sand; light yellow beige; black potentially asbestos containing plastic water or sewer pipe located at 0.8 mbgs.
TP4-05	07/07/2020	Fill (0.0-0.4 mbgs)	--	--	ASPHALT - Asphalt and granular material.
		Fill (0.4-0.85 mbgs)	SA1	0.6-0.7	FILL - Sand; dark brown sand from 0.4 to 0.5 mbgs, transitions to medium brown sand.
		Native (0.85-1.00 mbgs)	SA2	0.85-1	SAND - Sand with structures and darker weathered red-brown lenses; light brown.
TP4-06	07/08/2020	Fill (0.0-0.3 mbgs)	--	--	FILL - Silty sand; dark coloured.
		Fill (0.3-0.7 mbgs)	SA1	0.5	FILL - Sand with some silt or clayey silt patches; light to medium brown.
		Native (0.7-0.8 mbgs)	SA2	0.75	CLAY - Native clay to silty clay; grey brown.
TP4-07	07/08/2020	Topsoil (0-0.65 mbgs)	SA1	0.4	TOPSOIL - Sand with silt and trace gravel; dark brown.
		Bedrock (0.65 mbgs)	--	--	BEDROCK - Fractured bedrock.

Location	Date	Soil Unit	Sample Name	Sample Depth (mbgs)	Description
TP4-08	07/08/2020	Topsoil (0-0.30 mbgs)	--	--	TOPSOIL - Sandy silt with gravel and cobbles; brown, dry.
		Fill (0.3-0.5 mbgs)	SA1 / DUP-1	0.35-0.45	FILL - Gravel with some sand and silt between 0.3-0.4 mbgs; medium to dark brown sandy silt from 0.4-0.5 mbgs.
		Native (0.5-0.6 mbgs)	--	--	SILT - Fine, sandy silt; dark brown.
		Native (0.6-0.85 mbgs)	SA2	0.7-0.8	CLAY - Native clay to silty clay; grey brown.
TP4-09	07/07/2020	Fill (0.0-0.9 mbgs)	SA1	0.4-0.6	FILL - Fine sand and silt with some gravel and clay cobbles; light brown.
		Fill (0.9-1.2 mbgs)	--	--	SANDY SILT - Fine; medium brown.
		Bedrock (1.2 mbgs)	--	--	BEDROCK - Refusal at 1.2 mbgs.
TP4-10	07/07/2020	Debris (0.0-0.5 mbgs)	--	--	DEBRIS - Trace brick debris.
		Fill (0.5-2.50 mbgs)	SA1	1.75-2.00	FILL - Silt with clay and some sand; grey brown; moist.
TP4-11	07/07/2020	Fill (0.0-1.05 mbgs)	SA1	0.4-0.6	FILL - Silty sand and some gravel; grey brown.
		Bedrock (1.05 mbgs)	--	--	BEDROCK - Refusal at 1.05 mbgs.
TP4-12	07/07/2020	Fill (0.0-0.5 mbgs)	SA1	0.2-0.5	FILL - Silty fine sand with gravel; dark brown; dry.
		Bedrock (0.5 mbgs)	--	--	BEDROCK - Refusal at 0.5 mbgs.
TP4-13	2020-07-07	Fill (0.0-0.65 mbgs)	SA1	0-0.65	FILL - Silty sand fill with debris (5%); blackish grey.
		Fill (0.65-1.0 mbgs)	SA2	0.65-1.00	FILL - Silty sand fill with cobbles; brown.
		Bedrock (1.0 mbgs)	--	--	BEDROCK - Refusal at 1.0 mbgs.
TP4-15	07/07/2020	Fill (0.0-1.2 mbgs)	SA1	0.3-0.5	FILL - Silty sand and some gravel; medium brown.
		Bedrock (1.2 mbgs)	--	--	BEDROCK - Refusal at 1.2 mbgs.
TP4-16	07/07/2020	Fill (0.0-1.2 mbgs)	SA1	0.4-0.8	FILL - Silty sand with large angular rock chunks (~30-40%); medium yellowish brown.
		Fill (1.2-1.5 mbgs)	--	--	FILL - Sandy silt to fine sand and boulders; light beige with a rock ledge between 1.2-1.5mbgs.

Location	Date	Soil Unit	Sample Name	Sample Depth (mbgs)	Description
TP4-37A	07/10/2020	Fill (0.0-2.0 mbgs)	A	1.0	FILL - Asphalt and gravel with boulders to clayey silt with some sand and trace gravel; dark to medium brown; dry to moist.
TP4-37B	07/10/2020	Fill (0.0-2.0 mbgs)	B	1.0	FILL - Clayey silt with some to minor sand and trace gravel; dark to medium brown; dry to moist.
TP22-01	19-Oct-22	Topsoil (0.0-0.3 mbgs)	--	--	TOPSOIL - Dark brown silty sand
		Fill (0.3-1.5 mbgs)	SA1	1.0	FILL - Sandy silt with gravel, cobbles and boulders, grey to brown; metal debris; dry
		Fill (1.5-3.2 mbgs)	SA2	2.1	FILL - Sandy clay some gravel, cobbles and boulders, grey to brown; asphalt debris; moist.
			SA3	3.0	
		Fill (3.2-3.6 mbgs)	--	--	FILL - Clay silt with sand lens; asphalt, metal, and glass debris; moist.
		Bedrock (3.6 mbgs)	--	--	BEDROCK - Refusal at 3.6 mbgs.
TP22-02	19-Oct-22	Topsoil (0.0-0.1 mbgs)	--	--	TOPSOIL - Dark brown silty sand
		Fill (0.1-2.1 mbgs)	SA1	1.25-1.75	FILL - Silty clay some sand and gravel, grey to brown; metal piece at 0.3m; dry.
		Fill (2.1-4.2 mbgs)	SA2	2.25-2.75	FILL - Silty sand some gravel and boulders, brown; silt seem at 3.1 to 3.2 m; moist.
			SA3	3.75-4.2	
		Bedrock (4.2 mbgs)	--	--	BEDROCK - Refusal at 4.2 mbgs.
TP22-03	19-Oct-22	Topsoil (0.0-0.1 mbgs)	--	--	TOPSOIL - Dark brown silty sand; some metal and brick debris
		Fill (0.1-0.4 mbgs)	SA1	0.1-0.4	FILL - Silty clay trace gravel, grey; asphalt, metal and brick debris; moist.
		Fill (0.4-1.1 mbgs)	SA2	0.4-1.1	FILL - Sand some silt, grey; moist.
		Fill (1.1-1.5 mbgs)	--	--	FILL - Sandy silt, brown; moist.
		Bedrock (1.5 mbgs)	--	--	BEDROCK - Refusal at 1.5 mbgs.

Location	Date	Soil Unit	Sample Name	Sample Depth (mbgs)	Description
TP22-04	19-Oct-22	Topsoil (0.0-0.1 mbgs)	--	--	TOPSOIL - Dark brown silty sand
		Fill (0.1-2.2 mbgs)	SA1	1.5-1.7	FILL - Silty sand, some gravel, grey; cloth debris at 0.3 m; moist.
		Fill (2.2-4.0 mbgs)	SA2	2.7-3.0	FILL - Sandy silt, some gravel and boulders, brown; clay pocket from 2.5-3.0m; moist.
			SA3	3.7-4.0	
		Bedrock (4.0 mbgs)	--	--	BEDROCK - Refusal at 4.0 mbgs.
TP22-05	19-Oct-22	Topsoil (0.0-0.3 mbgs)	--	--	TOPSOIL - Dark brown silty sand
		Fill (0.3-2.7 mbgs)	SA1	0.9-1.2	FILL - Silty silt, some sand, gravel and cobbles, grey; brick and cloth debris at 2.1 m; moist.
			SA2	2.3-2.5	
		Fill (2.7-4.0 mbgs)	SA3	3.8-4.0	FILL - Silty sand, some clay and cobbles, brown; moist.
		Bedrock (4.0 mbgs)	--	--	BEDROCK - Refusal at 4.0 mbgs.
TP22-06	19-Oct-22	Fill (0.0-0.6 mbgs)	--	--	FILL - Sand and gravel, grey; dry.
		Fill (0.6-1.7 mbgs)	SA1	1.5-1.7	FILL - Clay with gravel, grey; moist.
		Fill (1.7-3.1 mbgs)	SA2	2.2-2.4	FILL - Silty clay, some gravel, cobble and boulders, grey; concrete debris and roots; moist.
		Fill (3.1-3.8 mbgs)	SA3	3.4-3.6	FILL - Silty clay, some gravel and boulders, grey; concrete debris and roots; moist.
		Bedrock (3.8 mbgs)	--	--	BEDROCK - Refusal at 3.8 mbgs.

Location	Date	Soil Unit	Sample Name	Sample Depth (mbgs)	Description
TP22-07	19-Oct-22	Topsoil (0.0-0.2 mbgs)	--	--	TOPSOIL - Dark brown silty sand
		Fill (0.2-1.1 mbgs)	SA1	1.5-1.7	FILL - Sandy silt with gravel, brown; brick and asphalt debris; moist.
		Fill (1.1-3.1 mbgs)	SA2	2.2-2.4	FILL - Clay with silt some sand, gravel, and cobbles, grey; brick and asphalt debris; moist.
		Fill (3.1-4.8 mbgs)	SA3	3.4-3.6	FILL - Silty clay some sand, gravel, and boulders, grey; brick and asphalt debris; moist.
			--	--	End of TP at 4.8 mbgs.

Notes: TP = Test Pit
SA = Sample
mbgs = meters below ground surface

LOG OF BOREHOLE BHMW126-1

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 3 March 2015

TVC * ■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						SAND - Some gravel, trace silt.	1			- Flush mount protective casing.
						BEDROCK.	2			
							3			
							4			
							5			Groundwater level 5.43 m.b.g.s (March 05, 2015).
						End Of Borehole at 6.15 m.	6			
							7			

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 2

LOG OF BOREHOLE BHMW137-1

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 11 February 2015

TVC * ■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						GRANULAR (BACKFILL).	1			- Flush mount protective casing.
							2			
						BEDROCK.	3			Groundwater level 3.43 m.b.g.s (February 17, 2015).
							4			
							5			
							6			
						End Of Borehole at 6.6 m.	7			

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 3

LOG OF BOREHOLE BHMW137-2

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 25 February 2015

TVC * ■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						SILTY SAND - Some gravel.	1			- Flush mount protective casing.
						BEDROCK.	2			Groundwater level 2.40 m.b.g.s (February 26, 2015)
							3			
						End Of Borehole at 4.0 m.	4			
							5			
							6			
							7			

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 4

LOG OF BOREHOLE BHMW137-3

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 26 February 2015

TVC * ■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						SILTY SAND AND GRAVEL .				- Flush mount protective casing.
						BEDROCK.	1			
							2			
							3			
							4			
							5			Groundwater level 4.66 m.b.g.s (February 26, 2015)
							6			
						End Of Borehole at 6.15 m.				
							7			

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 5

GASTECBH OE-OT-015358.GPJ DST_MIN.GDT 29/5/15

LOG OF BOREHOLE BHMW31-1

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 2 November 2015

TVC * ■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	SAMPLES No.	Type	SPT N-Value	SUBSURFACE PROFILE SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						GRANULAR (BACKFILL).	1			- Flush mount protective casing.
						SILTY SAND - Some gravel.	2			
						BEDROCK.	3			
							4			
							5			Groundwater level 4.87 m.b.g.s (February 17, 2015)
						End Of Borehole at 6.0 m.	6			
							7			

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 9

LOG OF BOREHOLE BHMW47-1

REF. No.: OE-OT-015358	**DST CONSULTING ENGINEERS INC.**
CLIENT: Canada Lands Company	
PROJECT: Soil and Groundwater Remediation	METHOD: CME 850
LOCATION: Former CFB Rockcliffe, Ottawa, Ontario	DIAMETER: 50.8 mm
SURFACE ELEVATION: metres	DATE: 11 February 2015

TVC *		SAMPLES			SUBSURFACE PROFILE					
■ % LEL 20 40 60 80 ○ PPM 200 400 600 800	TVC Conc. PPM/ LEL	No.	Type	SPT N-Value	SYMBL	MATERIAL DESCRIPTION	DPTH m	ELEV m	WATER DATA	REMARKS
						SURFACE				
						GRANULAR (BACKFILL).	1 2 3 4 5 6 7			- Flush mount protective casing.
						TILL - Sandy silt, grey, stiff.				Groundwater level 4.08 m.b.g.s (April 09, 2015)
						End Of Borehole at 6.4 m.				

DST consulting engineers

Auger Sample
Split Spoon
Continuous Sample

* - Total Vapour Concentration
NR - No Sample Recovery
ND - Not Detectable
Gastector 1238 ME

Bentonite & Riser
Sand Pack & Screen

ENCLOSURE 11

PROJECT: 19124906

RECORD OF BOREHOLE: 22-02

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 12, 2022

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE											
0	Geoprobe / Direct Push	TOPSOIL/FILL - (SM) SILTY SAND, trace gravel; light brown with reddish spots, contains roots; dry to moist		0.00	1	SS	-						Bentonite Seal
1													
2		BEDROCK		1.52									
3													
4													
5													Silica Sand
6													
7													Well Screen
8		End of Borehole		7.92									
9													
10													
11													
12													
13													
14													
15													

DEPTH SCALE

1 : 75

LOGGED: PAK

CHECKED: KPH

MIS-BHS 001 19124906.GPJ GAL-MIS.GDT 6/5/23 JEM

PROJECT: 19124906

RECORD OF BOREHOLE: 22-03

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 14, 2022

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 20 40 60 80) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE								
0	Geoprobe Direct Push	TOPSOIL/FILL - (SM) SILTY SAND, trace to some gravel; brown, contains roots and broken glass; non-cohesive, moist to dry		0.00	1	SS	-	ND		
1										
2		FILL - (SM) SILTY SAND, trace gravel; reddish with brown spots; non-cohesive, moist to dry		1.52	2	SS	-			
		BEDROCK		1.98						
3										Bentonite Seal
4										
5										
6										
7										Silica Sand
8										
9										Well Screen
10		End of Borehole		10.06						
11										
12										
13										
14										
15										

DEPTH SCALE

1 : 75

LOGGED: PAK

CHECKED: KPH

MIS-BHS 001 19124906.GPJ GAL-MIS.GDT 6/5/23 JEM

PROJECT: 19124906

RECORD OF BOREHOLE: 22-04

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 14, 2022

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.30m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ ND = Not Detected (20 40 60 80) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ ND = Not Detected (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE									
0	Geoprobe Direct Push	TOPSOIL/FILL - (SM) SILTY SAND, trace gravel; brown to grey, contains roots; non-cohesive, dry		0.00	1	SS	-				
1											
2		FILL - (MH/CH) CLAYEY SILT to SILTY CLAY, trace sand and gravel, low plasticity; brown; w~PL		1.50	2	SS	-	□ ⊕			
3		FILL - (SM/ML) SILTY SAND, to sandy SILT, trace clay and gravel; black, contains organic matter; non-plastic, moist		2.74	3	SS	-	□ ⊕			
		FILL - (SM) gravelly SILTY SAND; brown, contains weathered shale/limestone; non-cohesive		3.05							
4					4	SS	-				Bentonite Seal
5					5	SS	-				
		FILL - (CL/CH) SILTY CLAY to CLAY; brown to dark grey; cohesive, w~PL		5.18	6	SS	-	□			
7					7	SS	-	□ ⊕			
		FILL - (SM) gravelly SILTY SAND to SILTY SAND and GRAVEL; brown; non-cohesive, moist		7.47	8	SS	-				
8		BEDROCK		7.92							
9											Silica Sand
10											
11											Well Screen
12											
		End of Borehole		12.19							
13											
14											
15											

DEPTH SCALE

1 : 75

LOGGED: PAK

CHECKED: KPH

MIS-BHS 001 19124906.GPJ GAL-MIS.GDT 6/5/23 JEM

PROJECT: 19124906

RECORD OF BOREHOLE: 22-05

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 14, 2022

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.30m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE											
0	Geoprobe Direct Push	TOPSOIL/FILL - (SM) SILTY SAND, trace gravel; black, contains organic matter and roots; non-cohesive, moist		0.00	1	SS							
		FILL - (SM) gravelly SILTY SAND, non-plastic; light brown; non-cohesive		0.30	2	SS							
1		BEDROCK		0.61									
2													
3													
4													Bentonite Seal
5													
6													
7													
8													
9													Silica Sand
10													
11													Well Screen
12		End of Borehole		12.19									
13													
14													
15													

DEPTH SCALE

1 : 75

GOLDER

LOGGED: PAK

CHECKED: KPH

MIS-BHS 001 19124906.GPJ GAL-MIS.GDT 6/5/23 JEM

PROJECT: 19124906

RECORD OF BOREHOLE: 22-06

SHEET 1 OF 1

LOCATION: See Site Plan

BORING DATE: July 13, 2022

DATUM: Geodetic

SAMPLER HAMMER, 64kg; DROP, 760mm

PENETRATION TEST HAMMER, 64kg; DROP, 760mm

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	TYPE	BLOWS/0.30m	HEADSPACE COMBUSTIBLE VAPOUR CONCENTRATIONS [PPM] ⊕ (ND = Not Detected; 20 40 60 80) / HEADSPACE ORGANIC VAPOUR CONCENTRATIONS [PPM] □ (ND = Not Detected; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl; 20 40 60 80)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		GROUND SURFACE								
0	Geoprobe Direct Push	TOPSOIL/FILL - (SM/SP) SILTY SAND to SAND, some gravel; light brown, contains roots; dry to moist		0.00	1	SS	-	ND		Bentonite Seal
1		BEDROCK		1.22						
2										
3										
4										
5										
6										
7										
8										
9										Silica Sand
10										Well Screen
11										
12		End of Borehole		12.19						
13										
14										
15										

DEPTH SCALE

1 : 75

WSP GOLDER

LOGGED: PAK

CHECKED: KPH

MIS-BHS 001 19124906.GPJ GAL-MIS.GDT 6/5/23 JEM

APPENDIX D

Laboratory Certificates

AGAT Laboratories

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
http://www.agatlabs.com

CLIENT NAME: GOLDER ASSOCIATES LTD
1931 ROBERTSON ROAD
OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes

PROJECT: 19124906

AGAT WORK ORDER: 20Z613655

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 23, 2020

PAGES (INCLUDING COVER): 6

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*Notes

Disclaimer:

- *All work conducted herein has been done using accepted standard protocols, and generally accepted practices and methods. AGAT test methods may incorporate modifications from the specified reference methods to improve performance.*
- *All samples will be disposed of within 30 days following analysis, unless expressly agreed otherwise in writing. Please contact your Client Project Manager if you require additional sample storage time.*
- *AGAT's liability in connection with any delay, performance or non-performance of these services is only to the Client and does not extend to any other third party. Unless expressly agreed otherwise in writing, AGAT's liability is limited to the actual cost of the specific analysis or analyses included in the services.*
- *This Certificate shall not be reproduced except in full, without the written approval of the laboratory.*
- *The test results reported herewith relate only to the samples as received by the laboratory.*
- *Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to, warranties of merchantability, fitness for a particular purpose, or non-infringement. AGAT assumes no responsibility for any errors or omissions in the guidelines contained in this document.*
- *All reportable information as specified by ISO/IEC 17025:2017 is available from AGAT Laboratories upon request.*

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 20Z613655

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:ALB

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2020-06-16

DATE REPORTED: 2020-06-23

				SAMPLE DESCRIPTION:	137-3	137-1	Culvert	MW12	29-1	29-2
				SAMPLE TYPE:	Water	Water	Water	Water	Water	Water
				DATE SAMPLED:	2020-06-16 08:55	2020-06-16 09:20	2020-06-16 09:40	2020-06-16 10:40	2020-06-16 11:00	2020-06-16 11:15
Parameter	Unit	G / S	RDL		1202488	1202491	1202492	1202493	1202494	1202495
Benzene	µg/L	0.5	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.8	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.5	0.10		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Total)	µg/L	72	0.20		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 - C10)	µg/L	420	25		27	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	25		27	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	100		23000	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	100		16000	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	100		<100	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500		NA	NA	NA	NA	NA	NA
Sediment					Trace	No	No	No	No	No
Surrogate	Unit	Acceptable Limits								
Terphenyl	%	60-140			91	97	103	93	86	85

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1202488-1202495 The C6-C10 fraction is calculated using Toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and nC34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contribution.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.
NA = Not Applicable

Analysis performed at AGAT Toronto (unless marked by *)

Certified By: NPopowich

AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 20Z613655

PROJECT: 19124906

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CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
1202488	137-3	ON T1 GW	O. Reg. 153(511) - PHCs F1 - F4 (Water)	F2 (C10 to C16)	µg/L	150	23000
1202488	137-3	ON T1 GW	O. Reg. 153(511) - PHCs F1 - F4 (Water)	F3 (C16 to C34)	µg/L	500	16000

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z613655

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:ALB

Trace Organics Analysis

RPT Date: Jun 23, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (Water)															
Benzene	1207042		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	104%	60%	130%	94%	50%	140%
Toluene	1207042		< 0.20	< 0.20	NA	< 0.20	99%	50%	140%	93%	60%	130%	116%	50%	140%
Ethylbenzene	1207042		< 0.10	< 0.10	NA	< 0.10	91%	50%	140%	98%	60%	130%	102%	50%	140%
Xylenes (Total)	1207042		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	96%	60%	130%	106%	50%	140%
F1 (C6 - C10)	1207042		< 25	< 25	NA	< 25	96%	60%	140%	86%	60%	140%	109%	60%	140%
F2 (C10 to C16)	1197236		< 100	< 100	NA	< 100	100%	60%	140%	115%	60%	140%	112%	60%	140%
F3 (C16 to C34)	1197236		< 100	< 100	NA	< 100	93%	60%	140%	124%	60%	140%	128%	60%	140%
F4 (C34 to C50)	1197236		< 100	< 100	NA	< 100	87%	60%	140%	124%	60%	140%	121%	60%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: N Popnikolof

AGAT Laboratories

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z613655

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:ALB

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Benzene	VOL-91-5010	modified from EPA SW-846 5230B & 8260	(P&T)GC/MS
Toluene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	P&T GC/MS
Ethylbenzene	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	P&T GC/MS
Xylenes (Total)	VOL-91-5010	modified from EPA SW-846 5030C & 8260D	P&T GC/MS
F1 (C6 - C10)	VOL-91- 5010	modified from MOE PHC-E3421	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	modified from MOE PHC-E3421	P&T GC/FID
F2 (C10 to C16)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	modified from MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010	modified from MOE PHC-E3421	GC/FID
Sediment			

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
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webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Golder
Contact: Keith Holmes
Address: 1931 Robertson Rd. Bells Corners
Phone: 613-592-9600 Fax:
Reports to be sent to:
1. Email: keith_holmes@golder.com
2. Email:

Project Information:

Project: 19124906
Site Location:
Sampled By: ALB
AGAT Quote #: PO:
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company:
Contact:
Address:
Email:

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04
Table 1 *Indicate One*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(Check One)*
☐ Coarse
☐ Fine

☐ Excess Soils R406
Table *Indicate One*
Sample from APEC?
☐ Yes
☐ No
☐ Stockpile ☐ In-situ

☐ Regulation 558
☐ Sewer Use ☐ Sanitary ☐ Storm
Region
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a **Record of Site Condition?** ☐ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☐ No

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Laboratory Use Only

Work Order #: 20261365S
Cooler Quantity: One - on ice
Arrival Temperatures: 16.0 | 15.9 | 16.1
LT- 8.9 | 8.8 | 7.6
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes: (on ice)

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics, inc. EC/SAR	Metals - ICPMS, ☐ CrVI, ☐ Hg, ☐ HWSB	BTEX, F1-F4 PHCs, Analyze F4G if required ☐ Yes ☐ No	PAHs	PCBs	VOC	Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Excess Soils SPLP Rainwater Leach ☐ VOCs ☐ SVOCs	SPLP: ☐ Metals	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
137-3	20/06/16	8:55 AM PM	5	GW		N			X									
137-1	"	9:20 AM PM	5	"		N			X									
Culvert		9:40 AM PM	5			N			X									
MW19		10:40 AM PM	5			N			X									
29-1		11:00 AM PM	5			N			X									
29-2	↓	11:15 AM PM	5	↓		N			X									
		AM PM																
		AM PM																
		AM PM																
		AM PM																
		AM PM																

Samples Relinquished By (Print Name and Sign): Aaron Bradshaw	Date 20/06/16	Time 12:20	Samples Received By (Print Name and Sign): [illegible] 2020/06/16
Samples Relinquished By (Print Name and Sign): UPS to FedEx 2020/06/16	Date	Time 16h00	Samples Received By (Print Name and Sign):
Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign): Sharmin June 17/2020

Date: 20/06/16 Time: 12h46
Date: Time:
Date: Time: 9:45am

Page 1 of 1

No: T 104835

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OTTAWA, ON K2H5B7
(613) 592-9600

ATTENTION TO: Keith Holmes

PROJECT: 19124906

AGAT WORK ORDER: 20Z624793

SOIL ANALYSIS REVIEWED BY: Jacky Zhu, Spectroscopy Technician

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jul 23, 2020

PAGES (INCLUDING COVER): 34

VERSION*: 1

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*Notes

Disclaimer:

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

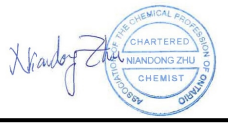
O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-01 SA1	TP4-02 SA1	TP4-03 SA1	TP4-04 SA1	TP4-05 SA1	TP4-07 SA1	TP4-09 SA1	TP4-10 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00
Parameter	Unit	G / S	RDL	1271650	1271695	1271696	1271697	1271698	1271699	1271700	1271701
Antimony	µg/g	7.5	0.8	1.1	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	4	2	2	3	1	3	2	1
Barium	µg/g	390	2	164	120	266	61	19	88	218	404
Beryllium	µg/g	4	0.5	0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.5	0.5
Boron	µg/g	120	5	12	5	<5	<5	<5	<5	5	<5
Boron (Hot Water Extractable)	µg/g	1.5	0.10	0.17	0.27	0.14	0.21	<0.10	0.28	0.22	0.17
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	23	29	71	16	13	23	63	111
Cobalt	µg/g	22	0.5	6.8	8.6	15.6	3.9	3.3	6.3	13.6	21.0
Copper	µg/g	140	1	34	15	34	9	3	11	29	38
Lead	µg/g	120	1	67	10	10	22	3	41	11	10
Molybdenum	µg/g	6.9	0.5	1.3	<0.5	<0.5	<0.5	<0.5	0.6	0.6	<0.5
Nickel	µg/g	100	1	17	17	38	9	6	14	34	52
Selenium	µg/g	2.4	0.4	0.6	<0.4	0.4	0.5	<0.4	0.6	0.4	0.6
Silver	µg/g	20	0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.5
Uranium	µg/g	23	0.5	0.8	0.7	0.8	0.6	0.5	0.5	0.9	1.3
Vanadium	µg/g	86	1	27	38	70	21	19	31	63	100
Zinc	µg/g	340	5	154	45	95	50	16	66	84	159
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

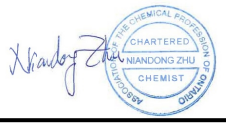
O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-11 SA1	TP4-12 SA1	TP4-13 SA1	TP7-29 SA1	TP7-30 SA1	TP7-31 SA2	TP7-32 SA1	TP7-33 SA2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271702	1271703	1271704	1271705	1271738	1271739	1271740	1271741
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	4	3	3	<1	2	4	<1
Barium	µg/g	390	2	161	117	242	98	21	80	91	76
Beryllium	µg/g	4	0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Boron	µg/g	120	5	5	9	<5	6	<5	<5	6	<5
Boron (Hot Water Extractable)	µg/g	1.5	0.10	0.19	0.35	0.26	0.36	<0.10	<0.10	0.29	<0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	32	23	59	26	9	29	19	16
Cobalt	µg/g	22	0.5	10.0	8.5	12.3	9.6	2.7	7.3	5.7	5.0
Copper	µg/g	140	1	21	30	38	18	7	14	14	11
Lead	µg/g	120	1	6	38	24	15	2	9	47	5
Molybdenum	µg/g	6.9	0.5	<0.5	0.8	1.1	0.5	<0.5	<0.5	0.9	<0.5
Nickel	µg/g	100	1	19	16	31	16	4	17	12	10
Selenium	µg/g	2.4	0.4	<0.4	0.7	0.6	0.4	<0.4	<0.4	0.7	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	0.6	0.5	0.9	0.6	<0.5	0.7	0.5	0.6
Vanadium	µg/g	86	1	41	28	56	34	14	32	25	26
Zinc	µg/g	340	5	44	45	106	54	10	42	57	25
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP7-34 SA2	TP7-35 SA1	TP7-36 SA1	TP4-37A	TP4-37B	TP4-15 SA1	TP4-16 SA1	TP6A-17 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271742	1271743	1271744	1271745	1271746	1271749	1271750	1271751
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	1	2	3	2	2	4	3	2
Barium	µg/g	390	2	63	123	102	342	322	74	99	81
Beryllium	µg/g	4	0.5	<0.5	<0.5	<0.5	0.7	0.8	<0.5	<0.5	<0.5
Boron	µg/g	120	5	<5	5	10	5	7	7	14	<5
Boron (Hot Water Extractable)	µg/g	1.5	0.10	<0.10	0.14	0.18	0.11	0.12	0.27	0.14	0.11
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	15	29	17	45	47	18	18	25
Cobalt	µg/g	22	0.5	5.9	6.7	7.0	12.2	12.9	7.8	6.7	7.0
Copper	µg/g	140	1	12	21	13	27	29	18	13	12
Lead	µg/g	120	1	6	13	19	11	16	87	10	8
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5	0.5	<0.5	<0.5	1.0	<0.5	<0.5
Nickel	µg/g	100	1	10	18	12	30	35	15	11	13
Selenium	µg/g	2.4	0.4	<0.4	0.7	0.5	<0.4	0.4	0.4	0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	0.6	1.2	<0.5	0.7	0.7	<0.5	<0.5	0.5
Vanadium	µg/g	86	1	25	27	22	52	73	26	20	33
Zinc	µg/g	340	5	24	69	31	69	98	79	24	34
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

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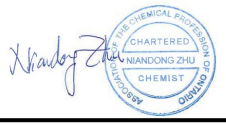

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP6A-20 SA1	TP6B-21 SA2	TP6B-22 SA1	TP6B-24 SA1	TP6B-25 SA1	TP6B-26 SA1	TP7-27 SA1	TP7-28 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271752	1271753	1271754	1271755	1271756	1271757	1271758	1271759
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	3	2	4	1	3	4	3
Barium	µg/g	390	2	356	256	77	112	49	228	86	113
Beryllium	µg/g	4	0.5	0.7	<0.5	0.6	<0.5	<0.5	0.7	0.5	<0.5
Boron	µg/g	120	5	<5	5	6	5	<5	5	6	<5
Boron (Hot Water Extractable)	µg/g	1.5	0.10	0.14	<0.10	<0.10	0.14	<0.10	0.11	0.26	0.10
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	104	56	18	19	12	54	23	33
Cobalt	µg/g	22	0.5	20.6	11.5	6.2	5.4	5.9	13.7	7.0	9.3
Copper	µg/g	140	1	46	22	6	31	14	30	18	20
Lead	µg/g	120	1	13	10	7	24	8	20	49	20
Molybdenum	µg/g	6.9	0.5	0.5	0.8	<0.5	0.5	<0.5	<0.5	0.6	0.5
Nickel	µg/g	100	1	52	48	11	13	9	29	15	19
Selenium	µg/g	2.4	0.4	0.4	0.4	0.5	<0.4	<0.4	0.4	0.5	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	1.1	0.6	<0.5	0.7	0.7	0.7	0.6	0.6
Vanadium	µg/g	86	1	101	43	25	26	21	60	27	38
Zinc	µg/g	340	5	126	40	31	187	26	199	56	83
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.13	0.17

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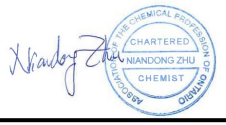

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793
PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD
SAMPLING SITE:

ATTENTION TO: Keith Holmes
SAMPLED BY:

O. Reg. 153(511) - All Metals (Soil)

DATE RECEIVED: 2020-07-14

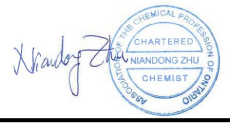
DATE REPORTED: 2020-07-23

				SAMPLE DESCRIPTION:	DUP2
				SAMPLE TYPE:	Soil
				DATE SAMPLED:	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271830	
Antimony	µg/g	7.5	0.8	<0.8	
Arsenic	µg/g	18	1	<1	
Barium	µg/g	390	2	20	
Beryllium	µg/g	4	0.5	<0.5	
Boron	µg/g	120	5	<5	
Boron (Hot Water Extractable)	µg/g	1.5	0.10	<0.10	
Cadmium	µg/g	1.2	0.5	<0.5	
Chromium	µg/g	160	5	7	
Cobalt	µg/g	22	0.5	3.1	
Copper	µg/g	140	1	7	
Lead	µg/g	120	1	2	
Molybdenum	µg/g	6.9	0.5	<0.5	
Nickel	µg/g	100	1	4	
Selenium	µg/g	2.4	0.4	<0.4	
Silver	µg/g	20	0.2	<0.2	
Thallium	µg/g	1	0.4	<0.4	
Uranium	µg/g	23	0.5	0.7	
Vanadium	µg/g	86	1	19	
Zinc	µg/g	340	5	11	
Chromium, Hexavalent	µg/g	8	0.2	<0.2	
Mercury	µg/g	0.27	0.10	<0.10	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				SPD-SA1	SPD-SA2	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00
Parameter	Unit	G / S	RDL	1271747	1271748	1271760	1271761	1271762	1271763	1271764
Antimony	µg/g	7.5	0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	2	2	2	1	2	2
Barium	µg/g	390	2	374	246	348	416	317	381	327
Beryllium	µg/g	4	0.5	1.0	0.5	0.8	1.0	0.7	0.8	0.9
Boron	µg/g	120	5	5	<5	<5	<5	<5	<5	5
Boron (Hot Water Extractable)	µg/g	1.5	0.10	0.28	0.14	0.26	0.15	<0.10	<0.10	0.34
Cadmium	µg/g	1.2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chromium	µg/g	160	5	113	71	111	131	98	120	101
Cobalt	µg/g	22	0.5	21.8	13.6	21.4	26.7	19.9	25.6	17.9
Copper	µg/g	140	1	57	37	50	59	49	59	45
Lead	µg/g	120	1	9	13	9	8	6	8	11
Molybdenum	µg/g	6.9	0.5	<0.5	0.5	<0.5	<0.5	<0.5	0.6	<0.5
Nickel	µg/g	100	1	58	39	56	69	53	64	46
Selenium	µg/g	2.4	0.4	0.7	0.5	0.6	0.4	<0.4	0.5	0.9
Silver	µg/g	20	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	0.5	<0.4	0.4	0.5	0.4	0.5	0.4
Uranium	µg/g	23	0.5	1.7	0.8	1.1	1.4	0.9	1.2	2.1
Vanadium	µg/g	86	1	102	69	100	119	90	113	94
Zinc	µg/g	340	5	146	131	134	152	114	136	140
Chromium, Hexavalent	µg/g	8	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.7	0.005	0.133	0.143	0.098	0.057	0.124	0.104	0.110
Sodium Adsorption Ratio	NA	5	NA	0.208	0.841	0.277	0.179	0.443	0.394	0.193
pH, 2:1 CaCl2 Extraction	pH Units	5.0-9.0	NA	7.46	7.64	7.20	7.09	7.42	7.49	7.32

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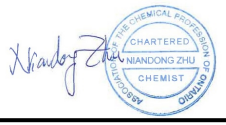

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals & Inorganics (Soil)

DATE RECEIVED: 2020-07-14

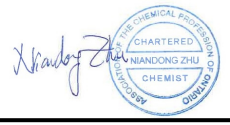
DATE REPORTED: 2020-07-23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1271747-1271764 EC was determined on the DI water extract obtained from the 2:1 leaching procedure (2 parts DI water:1 part soil). pH was determined on the 0.01M CaCl2 extract prepared at 2:1 ratio. SAR is a calculated parameter.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

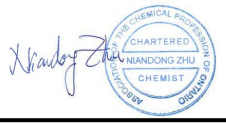
				SAMPLE DESCRIPTION:	TP4-15 SA1	TP6A-17 SA1	TP6B-21 SA2	TP7-27 SA1
				SAMPLE TYPE:	Soil	Soil	Soil	Soil
				DATE SAMPLED:	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL		1271749	1271751	1271753	1271758
pH, 2:1 CaCl2 Extraction	pH Units		NA		7.54	7.28	7.62	7.42

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

1271749-1271758 pH was determined on the 0.01M CaCl2 extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:



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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

		SAMPLE DESCRIPTION:		TP4-01 SA1	TP4-02 SA1	TP4-03 SA1	TP4-04 SA1	TP4-05 SA1	TP4-07 SA1	TP4-09 SA1	TP4-10 SA1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00
Parameter	Unit	G / S	RDL	1271650	1271695	1271696	1271697	1271698	1271699	1271700	1271701
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.05	0.06
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	11.4	13.2	20.9	10.9	4.8	10.1	14.6	26.6
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		67	61	78	62	86	71	82	64
Acenaphthene-d10	%	50-140		84	81	77	81	91	75	92	82
Chrysene-d12	%	50-140		74	74	80	77	116	76	100	75

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-11 SA1	TP4-12 SA1	TP4-13 SA1	TP7-29 SA1	TP7-30 SA1	TP7-31 SA2	TP7-32 SA1	TP7-33 SA2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271702	1271703	1271704	1271705	1271738	1271739	1271740	1271741
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	0.05	0.11	<0.05	<0.05	0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	0.07	<0.05	0.12	0.22	<0.05	<0.05	0.10	<0.05
Pyrene	µg/g	78	0.05	0.06	<0.05	0.10	0.17	<0.05	<0.05	0.08	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	0.05	0.09	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	0.07	0.09	<0.05	<0.05	0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	0.06	0.08	<0.05	<0.05	0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	0.05	0.07	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	18.4	5.9	11.4	5.9	3.7	10.2	6.8	12.5
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		67	79	78	78	85	74	71	91
Acenaphthene-d10	%	50-140		84	82	79	79	94	88	71	113
Chrysene-d12	%	50-140		78	96	76	85	93	91	77	94

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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP7-34 SA2	TP7-35 SA1	TP7-36 SA1	TP4-37A	TP4-37B	SPD-SA1	SPD-SA2	TP4-15 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271742	1271743	1271744	1271745	1271746	1271747	1271748	1271749
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	24.4	14.6	8.6	23.7	22.3	24.9	23.7	8.8
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		91	77	74	77	74	73	73	79
Acenaphthene-d10	%	50-140		93	79	86	87	82	76	78	82
Chrysene-d12	%	50-140		101	79	91	91	88	78	78	84

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-16 SA1	TP6A-17 SA1	TP6A-20 SA1	TP6B-21 SA2	TP6B-22 SA1	TP6B-24 SA1	TP6B-25 SA1	TP6B-26 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271750	1271751	1271752	1271753	1271754	1271755	1271756	1271757
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	8.2	8.1	21.5	11.1	7.5	4.8	5.3	12.7
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		81	105	85	70	95	73	76	74
Acenaphthene-d10	%	50-140		86	70	78	72	70	87	85	92
Chrysene-d12	%	50-140		86	73	75	82	74	72	70	81

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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PAHs (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP7-27 SA1	TP7-28 SA1	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7	DUP2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271758	1271759	1271760	1271761	1271762	1271763	1271764	1271830
Naphthalene	µg/g	0.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.15	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthene	µg/g	7.9	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	62	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	6.2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.67	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.69	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.09	<0.05	<0.05
Pyrene	µg/g	78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.08	<0.05	<0.05
Benz(a)anthracene	µg/g	0.5	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	7	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.78	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.38	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	6.6	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 and 2 Methlynaphthalene	µg/g	0.99	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moisture Content	%		0.1	27.7	7.2	26.2	23.8	25.9	26.5	23.8	8.0
Surrogate	Unit	Acceptable Limits									
Naphthalene-d8	%	50-140		93	82	72	85	84	78	84	71
Acenaphthene-d10	%	50-140		78	95	83	95	97	88	97	83
Chrysene-d12	%	50-140		83	80	85	102	99	93	92	89

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1271650-1271830 Results are based on the dry weight of the soil.
Note: The result for Benzo(b)Fluoranthene is the total of the Benzo(b)&j)Fluoranthene isomers because the isomers co-elute on the GC column.
2- and 1-Methyl Naphthalene is a calculated parameter. The calculated value is the sum of 2-Methyl Naphthalene and 1-Methyl Naphthalene.

Analysis performed at AGAT Toronto (unless marked by *)

Certified By:

AGAT Laboratories

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-01 SA1	TP4-02 SA1	TP4-03 SA1	TP4-04 SA1	TP4-05 SA1	TP4-07 SA1	TP4-09 SA1	TP4-10 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00
Parameter	Unit	G / S	RDL	1271650	1271695	1271696	1271697	1271698	1271699	1271700	1271701
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	88	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	88	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	64	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	11.4	13.2	20.9	10.9	4.8	10.1	14.6	26.6
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		77	109	74	103	107	86	86	62

Certified By:

AGAT Laboratories
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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP4-11 SA1	TP4-12 SA1	TP4-13 SA1	TP7-29 SA1	TP7-30 SA1	TP7-31 SA2	TP7-32 SA1	TP7-33 SA2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-07 12:00	2020-07-07 12:00	2020-07-07 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271702	1271703	1271704	1271705	1271738	1271739	1271740	1271741
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	18.4	5.9	11.4	5.9	3.7	10.2	6.8	12.5
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		82	102	97	80	112	75	120	64

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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP7-34 SA2	TP7-35 SA1	TP7-36 SA1	TP4-37A	TP4-37B	SPD-SA1	SPD-SA2	TP4-15 SA1
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271742	1271743	1271744	1271745	1271746	1271747	1271748	1271749
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	24.4	14.6	8.6	23.7	22.3	24.9	23.7	8.8
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		80	112	120	99	128	114	121	74

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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

		SAMPLE DESCRIPTION:		TP4-16 SA1	TP6A-17 SA1	TP6A-20 SA1	TP6B-21 SA2	TP6B-22 SA1	TP6B-24 SA1	TP6B-25 SA1	TP6B-26 SA1
		SAMPLE TYPE:		Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
		DATE SAMPLED:		2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271750	1271751	1271752	1271753	1271754	1271755	1271756	1271757
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	8.2	8.1	21.5	11.1	7.5	4.8	5.3	12.7
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		110	120	110	101	120	70	70	80

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AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

SAMPLE DESCRIPTION:				TP7-27 SA1	TP7-28 SA1	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7	DUP2
SAMPLE TYPE:				Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
DATE SAMPLED:				2020-07-08 12:00	2020-07-08 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-09 12:00	2020-07-08 12:00
Parameter	Unit	G / S	RDL	1271758	1271759	1271760	1271761	1271762	1271763	1271764	1271830
Benzene	µg/g	0.21	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	2.3	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	2	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	3.1	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g		10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g		50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50	<50	<50	<50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%		0.1	27.7	7.2	26.2	23.8	25.9	26.5	23.8	8.0
Surrogate	Unit	Acceptable Limits									
Terphenyl	%	60-140		74	75	72	70	70	75	80	72

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Certificate of Analysis

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

CLIENT NAME: GOLDER ASSOCIATES LTD

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)

DATE RECEIVED: 2020-07-14

DATE REPORTED: 2020-07-23

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 3: Full Depth Generic Site Condition Standards in a Non-Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

1271650-1271830 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
Xylenes total is a calculated parameter. The calculated value is the sum of m&p-Xylene and o-Xylene.
C6–C10 (F1 minus BTEX) is a calculated parameter. The calculated value is F1 minus BTEX.
The calculated parameters are non-accredited. The parameters that are components of the calculation are accredited.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX and PAH contributions.
C>10 – C16 (F2- Naphthalene) is a calculated parameter. The calculated value is F2 - Naphthalene.
C>16 - C34 (F3-PAH) is a calculated parameter. The calculated value is F3-PAH (PAH: sum of Phenanthrene, Benzo(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-c,d)pyrene and Pyrene).
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.

Analysis performed at AGAT Toronto (unless marked by *)

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Guideline Violation

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

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SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
1271701	TP4-10 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Barium	µg/g	390	404
1271701	TP4-10 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Vanadium	µg/g	86	100
1271747	SPD-SA1	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	102
1271752	TP6A-20 SA1	ON T3 S RPI CT	O. Reg. 153(511) - All Metals (Soil)	Vanadium	µg/g	86	101
1271760	SPD-SA3	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	100
1271761	SPD-SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Barium	µg/g	390	416
1271761	SPD-SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	26.7
1271761	SPD-SA4	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	119
1271762	SPD-SA5	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	90
1271763	SPD-SA6	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Cobalt	µg/g	22	25.6
1271763	SPD-SA6	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	113
1271764	SPD-SA7	ON T3 S RPI CT	O. Reg. 153(511) - Metals & Inorganics (Soil)	Vanadium	µg/g	86	94

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 20Z624793
PROJECT: 19124906
ATTENTION TO: Keith Holmes
SAMPLING SITE:
SAMPLED BY:

Soil Analysis

RPT Date: Jul 23, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)															
Antimony	1271650	1271650	1.1	1.0	NA	< 0.8	124%	70%	130%	107%	80%	120%	108%	70%	130%
Arsenic	1271650	1271650	4	4	NA	< 1	110%	70%	130%	101%	80%	120%	100%	70%	130%
Barium	1271650	1271650	164	162	1.2%	< 2	108%	70%	130%	108%	80%	120%	107%	70%	130%
Beryllium	1271650	1271650	0.5	0.5	NA	< 0.5	86%	70%	130%	103%	80%	120%	88%	70%	130%
Boron	1271650	1271650	12	12	NA	< 5	89%	70%	130%	93%	80%	120%	81%	70%	130%
Boron (Hot Water Extractable)	1271650	1271650	0.17	0.18	NA	< 0.10	89%	60%	140%	95%	70%	130%	95%	60%	140%
Cadmium	1271650	1271650	<0.5	<0.5	NA	< 0.5	104%	70%	130%	100%	80%	120%	104%	70%	130%
Chromium	1271650	1271650	23	24	NA	< 5	95%	70%	130%	101%	80%	120%	106%	70%	130%
Cobalt	1271650	1271650	6.8	7.2	5.7%	< 0.5	90%	70%	130%	99%	80%	120%	94%	70%	130%
Copper	1271650	1271650	34	37	8.5%	< 1	91%	70%	130%	100%	80%	120%	96%	70%	130%
Lead	1271650	1271650	67	65	3.0%	< 1	106%	70%	130%	105%	80%	120%	102%	70%	130%
Molybdenum	1271650	1271650	1.3	1.4	NA	< 0.5	105%	70%	130%	107%	80%	120%	105%	70%	130%
Nickel	1271650	1271650	17	19	11.1%	< 1	90%	70%	130%	96%	80%	120%	93%	70%	130%
Selenium	1271650	1271650	0.6	0.6	NA	< 0.4	131%	70%	130%	98%	80%	120%	100%	70%	130%
Silver	1271650	1271650	0.2	0.2	NA	< 0.2	100%	70%	130%	98%	80%	120%	95%	70%	130%
Thallium	1271650	1271650	<0.4	<0.4	NA	< 0.4	110%	70%	130%	100%	80%	120%	99%	70%	130%
Uranium	1271650	1271650	0.8	0.7	NA	< 0.5	110%	70%	130%	99%	80%	120%	102%	70%	130%
Vanadium	1271650	1271650	27	29	7.1%	< 1	101%	70%	130%	96%	80%	120%	100%	70%	130%
Zinc	1271650	1271650	154	164	6.3%	< 5	96%	70%	130%	102%	80%	120%	109%	70%	130%
Chromium, Hexavalent	1271741	1271741	<0.2	<0.2	NA	< 0.2	90%	70%	130%	85%	80%	120%	94%	70%	130%
Mercury	1271650	1271650	0.13	0.13	NA	< 0.10	107%	70%	130%	100%	80%	120%	104%	70%	130%

Comments: QA Qualifier for metals - Selenium: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

O. Reg. 153(511) - Metals & Inorganics (Soil)															
Antimony	1271747	1271747	<0.8	<0.8	NA	< 0.8	135%	70%	130%	104%	80%	120%	108%	70%	130%
Arsenic	1271747	1271747	2	2	NA	< 1	108%	70%	130%	100%	80%	120%	95%	70%	130%
Barium	1271747	1271747	374	378	1.1%	< 2	101%	70%	130%	100%	80%	120%	94%	70%	130%
Beryllium	1271747	1271747	1.0	0.8	NA	< 0.5	98%	70%	130%	101%	80%	120%	110%	70%	130%
Boron	1271747	1271747	5	5	NA	< 5	79%	70%	130%	101%	80%	120%	97%	70%	130%
Boron (Hot Water Extractable)	1271747	1271747	0.28	0.18	NA	< 0.10	92%	60%	140%	103%	70%	130%	93%	60%	140%
Cadmium	1271747	1271747	<0.5	<0.5	NA	< 0.5	106%	70%	130%	101%	80%	120%	100%	70%	130%
Chromium	1271747	1271747	113	118	4.3%	< 5	92%	70%	130%	95%	80%	120%	103%	70%	130%
Cobalt	1271747	1271747	21.8	22.7	4.0%	< 0.5	88%	70%	130%	95%	80%	120%	85%	70%	130%
Copper	1271747	1271747	57	55	3.6%	< 1	85%	70%	130%	99%	80%	120%	78%	70%	130%
Lead	1271747	1271747	9	9	0.0%	< 1	107%	70%	130%	108%	80%	120%	103%	70%	130%
Molybdenum	1271747	1271747	<0.5	<0.5	NA	< 0.5	105%	70%	130%	101%	80%	120%	97%	70%	130%
Nickel	1271747	1271747	58	59	1.7%	< 1	87%	70%	130%	91%	80%	120%	95%	70%	130%
Selenium	1271747	1271747	0.7	0.6	NA	< 0.4	130%	70%	130%	94%	80%	120%	90%	70%	130%

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Quality Assurance

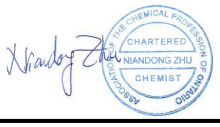
CLIENT NAME: GOLDER ASSOCIATES LTD
AGAT WORK ORDER: 20Z624793
PROJECT: 19124906
ATTENTION TO: Keith Holmes
SAMPLING SITE:
SAMPLED BY:

Soil Analysis (Continued)

RPT Date: Jul 23, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Silver	1271747	1271747	<0.2	<0.2	NA	< 0.2	98%	70%	130%	99%	80%	120%	92%	70%	130%
Thallium	1271747	1271747	0.5	0.5	NA	< 0.4	102%	70%	130%	100%	80%	120%	98%	70%	130%
Uranium	1271747	1271747	1.7	1.6	NA	< 0.5	106%	70%	130%	102%	80%	120%	100%	70%	130%
Vanadium	1271747	1271747	102	106	3.8%	< 1	97%	70%	130%	94%	80%	120%	84%	70%	130%
Zinc	1271747	1271747	146	145	0.7%	< 5	97%	70%	130%	99%	80%	120%	115%	70%	130%
Chromium, Hexavalent	1271761	1271761	<0.2	<0.2	NA	< 0.2	90%	70%	130%	85%	80%	120%	94%	70%	130%
Cyanide, Free	1271760	1271760	<0.040	<0.040	NA	< 0.040	102%	70%	130%	99%	80%	120%	93%	70%	130%
Mercury	1271747	1271747	<0.10	<0.10	NA	< 0.10	103%	70%	130%	99%	80%	120%	105%	70%	130%
Electrical Conductivity (2:1)	1271747	1271747	0.133	0.134	0.7%	< 0.005	101%	80%	120%						
Sodium Adsorption Ratio	1271747	1271747	0.208	0.208	0.0%	NA									
pH, 2:1 CaCl2 Extraction	1271761	1271761	7.09	7.03	0.8%	NA	100%	80%	120%						

Comments: NA signifies Not Applicable.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.
QA Qualifier for metals - Antimony: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

Certified By:



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http://www.agatlabs.com

Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jul 23, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	1271745	1271745	< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	85%	60%	130%	83%	50%	140%
Toluene	1271745	1271745	< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	112%	60%	130%	96%	50%	140%
Ethylbenzene	1271745	1271745	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	90%	60%	130%	90%	50%	140%
Xylenes (Total)	1271745	1271745	< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	88%	60%	130%	94%	50%	140%
F1 (C6 to C10)	1271745	1271745	< 5	< 5	NA	< 5	108%	60%	140%	99%	60%	140%	91%	60%	140%
F2 (C10 to C16)	1271745	1271745	< 10	< 10	NA	< 10	118%	60%	140%	104%	60%	140%	72%	60%	140%
F3 (C16 to C34)	1271745	1271745	< 50	< 50	NA	< 50	97%	60%	140%	117%	60%	140%	89%	60%	140%
F4 (C34 to C50)	1271745	1271745	< 50	< 50	NA	< 50	90%	60%	140%	117%	60%	140%	98%	60%	140%
O. Reg. 153(511) - PAHs (Soil)															
Naphthalene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	97%	50%	140%	70%	50%	140%
Acenaphthylene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	109%	50%	140%	79%	50%	140%
Acenaphthene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	108%	50%	140%	79%	50%	140%
Fluorene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	106%	50%	140%	111%	50%	140%	81%	50%	140%
Phenanthrene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	108%	50%	140%	85%	50%	140%
Anthracene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	113%	50%	140%	89%	50%	140%
Fluoranthene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	105%	50%	140%	97%	50%	140%
Pyrene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	107%	50%	140%	105%	50%	140%	95%	50%	140%
Benz(a)anthracene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	93%	50%	140%	80%	50%	140%
Chrysene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	108%	50%	140%	95%	50%	140%
Benzo(b)fluoranthene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	99%	50%	140%	97%	50%	140%
Benzo(k)fluoranthene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	90%	50%	140%	94%	50%	140%
Benzo(a)pyrene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	97%	50%	140%	102%	50%	140%
Indeno(1,2,3-cd)pyrene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	79%	50%	140%	76%	50%	140%
Dibenz(a,h)anthracene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	78%	50%	140%	86%	50%	140%
Benzo(g,h,i)perylene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	81%	50%	140%	82%	50%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
F2 (C10 to C16)	1271830	1271830	< 10	< 10	NA	< 10	100%	60%	140%	114%	60%	140%	99%	60%	140%
F3 (C16 to C34)	1271830	1271830	< 50	< 50	NA	< 50	101%	60%	140%	119%	60%	140%	90%	60%	140%
F4 (C34 to C50)	1271830	1271830	< 50	< 50	NA	< 50	95%	60%	140%	91%	60%	140%	85%	60%	140%
O. Reg. 153(511) - PHCs F1 - F4 (with PAHs) (Soil)															
Benzene	1271830	1271830	< 0.02	< 0.02	NA	< 0.02	86%	50%	140%	89%	60%	130%	92%	50%	140%
Toluene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	89%	50%	140%	92%	60%	130%	108%	50%	140%
Ethylbenzene	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	100%	60%	130%	89%	50%	140%
Xylenes (Total)	1271830	1271830	< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	100%	60%	130%	90%	50%	140%
F1 (C6 to C10)	1271830	1271830	< 5	< 5	NA	< 5	94%	60%	140%	109%	60%	140%	100%	60%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

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Quality Assurance

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jul 23, 2020			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Certified By:

AGAT Laboratories

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QA Violation

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

RPT Date: Jul 23, 2020

PARAMETER	Sample Id	Sample Description	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
			Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
				Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - All Metals (Soil)											
Selenium	1271650	TP4-01 SA1	131%	70%	130%	98%	80%	120%	100%	70%	130%

Comments: QA Qualifier for metals - Selenium: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

O. Reg. 153(511) - Metals & Inorganics (Soil)											
Antimony	1271747	SPD-SA1	135%	70%	130%	104%	80%	120%	108%	70%	130%

Comments: NA signifies Not Applicable.
If RPD value is NA, the results of the duplicates are less than 5x the RDL and the RPD will not be calculated.
QA Qualifier for metals - Antimony: For a multi-element scan for lab control standards and matrix spikes, up to 10% of analytes may exceed the quoted limits by up to 10% absolute and it is considered acceptable.

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Arsenic	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Barium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Beryllium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Boron (Hot Water Extractable)	MET-93-6104	modified from EPA 6010D and MSA PART 3, CH 21	ICP/OES
Cadmium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cobalt	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Copper	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Lead	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Molybdenum	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Nickel	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Selenium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Silver	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Thallium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Uranium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Vanadium	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Zinc	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Chromium, Hexavalent	INOR-93-6068	modified from EPA 3060 and EPA 7196	SPECTROPHOTOMETER
Mercury	MET-93-6103	modified from EPA 3050B and EPA 6020B and ON MOECC	ICP-MS
Cyanide, Free	INOR-93-6052	modified from ON MOECC E3015 and SM 4500-CN- I	TECHNICON AUTO ANALYZER
Electrical Conductivity (2:1)	INOR-93-6036	modified from MSA PART 3, CH 14 and SM 2510 B	EC METER
Sodium Adsorption Ratio	INOR-93-6007	McKeague 4.12 & 3.26 & EPA SW-846 6010C	ICP/OES
pH, 2:1 CaCl2 Extraction	INOR-93-6031	modified from EPA 9045D and MCKEAGUE 3.11	PH METER

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Naphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acenaphthylene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acenaphthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Fluorene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Phenanthrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benz(a)anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Chrysene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(b)fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(k)fluoranthene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(a)pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Indeno(1,2,3-cd)pyrene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Dibenz(a,h)anthracene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzo(g,h,i)perylene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
1 and 2 Methlynaphthalene	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Moisture Content	ORG-91-5106	Tier 1 Method	BALANCE
Naphthalene-d8	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Acenaphthene-d10	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Chrysene-d12	ORG-91-5106	modified from EPA 3570 and EPA 8270E	GC/MS
Benzene	VOL-91-5009	modified from EPA 5035C and EPA 8260D	(P&T)GC/MS
Toluene	VOL-91-5009	modified from EPA SW-846 5035C & 8260D	P&T GC/MS
Ethylbenzene	VOL-91-5009	modified from EPA SW-846 5035C & 8260D	P&T GC/MS
Xylenes (Total)	VOL-91-5009	modified from EPA SW-846 5035C & 8260D	P&T GC/MS
F1 (C6 to C10)	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	modified from CCME Tier 1 Method	P&T GC/FID
F2 (C10 to C16)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F2 (C10 to C16) minus Naphthalene	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F3 (C16 to C34)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID

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Method Summary

CLIENT NAME: GOLDER ASSOCIATES LTD

AGAT WORK ORDER: 20Z624793

PROJECT: 19124906

ATTENTION TO: Keith Holmes

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
F3 (C16 to C34) minus PAHs	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
F4 (C34 to C50)	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Moisture Content	VOL-91-5009	modified from CCME Tier 1 Method	BALANCE
Terphenyl	VOL-91-5009	modified from CCME Tier 1 Method	GC/FID

AGAT Laboratories

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webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 2026247 93

Cooler Quantity: two - onice (melted)

Arrival Temperatures: See attached.

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes:

Report Information:

Company: Golder

Contact: Keith Holmes

Address:

Phone: Fax:

Reports to be sent to:

1. Email: kholmes@golder.com

2. Email:

Project Information:

Project: 19124906

Site Location:

Sampled By: KM

AGAT Quote #: 337349 PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:

Contact:

Address:

Email:

Regulatory Requirements:

(Please check all applicable boxes)

☐ Regulation 558

☒ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine

☐ Excess Soils R406
Table (Indicate One)
Sample from APEC?
☐ Yes
☐ No
☐ Stockpile ☐ In-situ

☐ Sewer Use
☐ Sanitary ☐ Storm
(Region)
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
(Indicate One)

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT

**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI, DOC (Y/N)	O. Reg 153: Metals & Inorganics (Inc. EC/SAR)	Metals - ICPMS, ☒ CrVI, ☒ Hg, ☒ HWSB	BTEX, F1-F4 PHCs, Analyze F4G if required ☒ Yes ☐ No	PAHs	PCBs	VOC	Landfill Disposal Characterization TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Excess Soils SPLP Rainwater Leach ☐ Metals ☐ VOCs ☐ SVOCs	Excess Soils Characterization Package pH, ICPMS Metals, BTEX, F1-F4	Salt - EC/SAR	Potentially Hazardous or High Concentration (Y/N)
TP4-01 SA1	7/7/20	12:00 AM PM	3	S			X	X	X	X							
TP4-02 SA1	"	"	"	"			"	"	"	"							
TP4-03 SA1																	
TP4-04 SA1																	
TP4-05 SA1																	
TP4-07 SA1																	
TP4-09 SA1																	
TP4-10 SA1																	
TP4-11 SA1																	
TP4-12 SA1																	
TP4-13 SA1																	

Samples Relinquished By (Print Name and Sign):	Date	Time	Samples Received By (Print Name and Sign):	Date	Time
Keith Holmes	13/07/20	16h00	[illegible]	2020/07/14	11h06
UPS to FedEx	2020/07/14	16h00	SMR AM	July 15/20	10:20 am

Page 1 of 4

Nº: T 106448

AGAT Laboratories

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P: 905.712.5100 · F: 905.712.5122

Chain of Custody Record

Laboratory Use Only

Arrival Temperature: 2°C
AGAT WO #: 20T624793
Lab Temperature:
Notes:

Client Information

Company:
Contact:
Address:
Phone: Fax:
Project: PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements

- [x] Regulation 153/04 (reg. 511 Amend.) — Table 3 (Indicate one)
  - [ ] Ind/Com
  - [x] Res/Park
  - [ ] Agriculture
- Soil Texture (check one): [x] Coarse [ ] Fine
- [ ] Sewer Use — Region (Indicate one): [ ] Sanitary [ ] Storm
- [ ] Regulation 558
- [ ] CCME
- [ ] Other (specify)
- [ ] Prov. Water Quality Objectives (PWQO)
- [ ] None

Is this a drinking water sample? (potable water intended for human consumption) ☐ Yes ☐ No
If "Yes", please use the Drinking Water Chain of Custody Form

Is this submission for a Record of Site Condition? [x] Yes ☐ No

Turnaround Time Required (TAT) Required*

Regular TAT
- [x] 5 to 7 Working Days

Rush TAT (please provide prior notification)
Rush Surcharges Apply
- [ ] 3 Working Days
- [ ] 2 Working Days
- [ ] 1 Working Day

OR

Date Required (Rush surcharges may apply):

*TAT is exclusive of weekends and statutory holidays

Invoice To

Same: Yes ☐ No ☐
Company:
Contact:
Address:

Legend Matrix

GW Ground Water **O** Oil
SW Surface Water **P** Paint
SD Sediment **S** Soil

Report Information – reports to be sent to:

1. Name:
   Email:
2. Name:
   Email:

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan (153)	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☑ Cr+6 ☐ SAR ☑ Hg ☐ pH ☐ NO₃/NO₂ ☐ N-Total	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃/NO₂	VOC: ☐ VOC ☐ THM ☑ BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
TP7-29 SA1	07/08/20	12:00	S	3	No Inorganics on TP samples only	X	X			X		X	X		X					
TP7-30 SA1	↓	↓	↓	↓	↓	↓	↓			↓		↓	↓		↓					
TP7-31 SA2	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP7-32 SA1	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP7-33 SA2	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP7-34 SA2	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP7-35 SA1	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP7-36 SA1	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP4-37A	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
TP4-37B	↓	↓	↓	↓		↓	↓			↓		↓	↓		↓					
SPD-SA1	↓	↓	↓	↓	on SPD samples	X	↓			↓		↓	↓		↓					
SPD-SA2	↓	↓	↓	↓		X	↓			↓		↓	↓		↓					

Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time
Keith Holmes	13/07/20 2:30	UB	2020/07/14 11h00
UB	2020/07/14 16h00	SIMRAN	July 15/20 10:22am

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White Copy- AGAT

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Nº: 42721

AGAT Laboratories

5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Laboratory Use Only

Work Order #: 20Z624793

Cooler Quantity: ~~2~~ 1 B

Arrival Temperatures: ____ | ____ | ____

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: ____

Report Information:

Company:
Contact:
Address:
Phone: Fax:
Reports to be sent to:
1. Email:
2. Email:

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☑ Regulation 153/04
Table 3 (Indicate One)
☐ Ind/Com
☒ Res/Park
☐ Agriculture

Soil Texture (Check One)
☑ Coarse
☐ Fine

☐ Sewer Use
☐ Sanitary
☐ Storm
Region ____ (Indicate One)
☐ MISA

☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other ____ (Indicate One)

Is this submission for a **Record of Site Condition?** ☒ Yes ☐ No

Report Guideline on *Certificate of Analysis* ☐ Yes ☒ No

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): ____

Please provide prior notification for rush TAT
**TAT is exclusive of weekends and statutory holidays*

For 'Same Day' analysis, please contact your AGAT CPM

Project Information:

Project:
Site Location:
Sampled By:
AGAT Quote #: PO:

Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☐ No ☐

Company:
Contact:
Address:
Email:

Sample Matrix Legend

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Field Filtered - Metals, Hg, CrVI (Y/N)	Metals and Inorganics	O. Reg 153: ☐ All Metals ☐ 153 Metals (excl. Hydrides) ☒ Hydride Metals / 153 Metals (incl. Hydrides)	ORPs: ☒ B-HWS ☐ Cl- ☐ CN ☒ Cr6+ ☐ EC ☐ FOC ☒ Hg ☐ pH ☐ SAR	Full Metals Scan	Regulation/Custom Metals	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂	Volatiles: ☐ VOC ☒ BTEX ☐ THM	PHCs F1 - F4	ABNs	PAHs	PCBs: ☐ Total ☐ Aroclors	Organochlorine Pesticides	TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs	Sewer Use	pH
TP4-15 SA1	8/07/20	12:00	3	S				X	X					X		X					X
TP4-16 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP6A-17 SA1	↓	↓	↓	↓				↓	↓					↓		↓					X
TP6A-20 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP6B-21 SA2	↓	↓	↓	↓				↓	↓					↓		↓					X
TP6B-22 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP6B-24 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP6B-25 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP6B-26 SA1	↓	↓	↓	↓				↓	↓					↓		↓					
TP7-27 SA1	↓	↓	↓	↓				↓	↓					↓		↓					X
TP7-28 SA1	↓	↓	↓	↓				↓	↓					↓		↓					

Samples Relinquished By (Print Name and Sign)	Date	Time	Samples Received By (Print Name and Sign)	Date	Time
Keith Holmes	13/07/20	3:30	VB/ID	2020/7/14	11h06
VB/ID to FedEx	2020/07/14	16h00	SIMRAN	July 15/20	10:20am

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Nº: T085407

Document ID: DIV-78-1511.015

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Date Issued: March 16, 2018

AGAT Laboratories

5835 Coopers Avenue
Mississauga, ON
L4Z 1Y2
www.agatlabs.com · webearth.agatlabs.com

Chain of Custody Record

P: 905.712.5100 · F: 905.712.5122

Laboratory Use Only

Arrival Temperature:
AGAT WO #: 20T624793
Lab Temperature:
Notes:

Client Information

Company:
Contact:
Address:
Phone: Fax:
Project: PO:
AGAT Quotation #:

Please note, if quotation number is not provided, client will be billed full price for analysis.

Regulatory Requirements

☐ Regulation 153/04 (reg. 511 Amend.)
Table ____ *Indicate one*
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture *(check one)*
☐ Coarse ☐ Fine

☐ Sewer Use
Region ____ *Indicate one*
☐ Sanitary
☐ Storm

☐ Regulation 558
☐ CCME
☐ Other *(specify)*
☐ Prov. Water Quality Objectives (PWQO)
☐ None

Turnaround Time Required (TAT) Required*

Regular TAT
☐ 5 to 7 Working Days

Rush TAT (please provide prior notification)
Rush Surcharges Apply
☐ 3 Working Days
☐ 2 Working Days
☐ 1 Working Day

OR

Date Required (Rush surcharges may apply):

**TAT is exclusive of weekends and statutory holidays*

Invoice To

Same: Yes ☐ No ☐
Company:
Contact:
Address:

Is this a drinking water sample?
(potable water intended for human consumption)
☐ Yes ☐ No
If "Yes", please use the *Drinking Water Chain of Custody Form*

Is this submission for a **Record of Site Condition**?
☐ Yes ☐ No

Legend Matrix

GW	Ground Water	**O**	Oil
SW	Surface Water	**P**	Paint
SD	Sediment	**S**	Soil

Report Information – reports to be sent to:

1. Name:
   Email:
2. Name:
   Email:

Sample Identification	Date Sampled	Time Sampled	Sample Matrix	# of Containers	Comments Site/Sample Information	Metals and Inorganics	Metal Scan (153 complete)	Hydride Forming Metals	Client Custom Metals	ORPs: ☐ B-HWS ☐ Cl- ☐ CN- ☐ EC ☐ FOC ☐ Cr+6 ☐ SAR ☐ Hg ☐ pH ☐ NO₂/NO₃ ☐ N-Total	Nutrients: ☐ TP ☐ NH₃ ☐ TKN ☐ NO₃ ☐ NO₂ ☐ NO₃/NO₂	VOC: ☐ VOC ☐ THM ☐ BTEX	CCME Fractions 1 to 4	ABNs	PAHs	Chlorophenols	PCBs	Organochlorine Pesticides	TCLP Metals/Inorganics	Sewer Use
SPD-SD (struck)	9/07/20	12:00	S	3		X				X			X		X					
SPD-SA4	↓	↓	↓	↓		↓				↓			↓		↓					
SPD-SA5	↓	↓	↓	↓		↓				↓			↓		↓					
SPD-SA6	↓	↓	↓	↓		↓				↓			↓		↓					
SPD-SA7	↓	↓	↓	↓		↓				↓			↓		↓					
DUP2	7/07/20	12:00	S	3			X			✓			X		X					

Samples Relinquished By (Print Name and Sign):	Date/Time	Samples Received By (Print Name and Sign):	Date/Time
		UB	2020/07/14 11h00
UB To FedEx	2020/07/14 16h00	SIMRAN	July 15/20 10:20 am

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Yellow Copy - AGAT
White Copy - AGAT

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Nº: 42722

Document ID: DIV-78-1511.008

Date Issued: May 31, 2013

AGAT Laboratories

Sample Temperature Log

Client: Golden

COC# or Work Order #: 2076247 93

# of Coolers: two - ice (melted)

# of Submissions: one

	Arrival Temperatures - Branch/Driver	Arrival Temperatures - Laboratory
Cooler #1:	11.7 / 12.5 / 12.2	6.6 / 6.7 / 6.8
Cooler #2:	14.4 / 14.5 / 14.1	7.2 / 6.8 / 7.5
Cooler #3:	/ /	/ /
Cooler #4:	/ /	/ /
Cooler #5:	/ /	/ /
Cooler #6:	/ /	/ /
Cooler #7:	/ /	/ /
Cooler #8	/ /	/ /
Cooler #9:	/ /	/ /
Cooler #10:	/ /	/ /
IR Gun ID:	1439003407	
Taken By:	Linda.B	SIMRAN
Date (yyyy/mm/dd):	2020/07/14	2020/07/15
Time:	11 : 06 (AM) / PM	10 : 20 ✓ AM / PM

Instructions for use of this form: 1) complete all fields of info including total # of coolers and # of submissions rec'd, 2) photocopy and place in each submission prior to giving a WO#, 3) Proceed as normal, write the WO# and scan (please make sure to scan along with the COC)

APPENDIX E

Tables

Monitoring well ID	Date of well completion	Ground surface elevation (m)[1]	Monitoring well elevation (m)[1]	Borehole depth (mbgs)	Borehole depth elevation (m)[1]	Screen interval (mbgs)	Screen interval elevation (m)[1]	Screened media
BHMW14	16-Nov-04	90.20	90.93	6.2	84.00	2.1 - 6.2	84.00-88.10	Bedrock
BHMW126-1	03-Mar-15	90.54	91.47	6.2	84.34	3.9 - 6.2	84.34-86.64	Bedrock
BHMW31-1	02-Nov-15	82.91	83.87	6	76.91	3.1 - 6	76.91-79.81	Bedrock
22-02	11-Jul-22	88.79	89.469	7.92	80.87	4.88 - 7.92	83.91-80.87	Bedrock
22-03	12-Jul-22	86.22	86.959	10.06	76.16	7.01 - 10.06	79.21-76.16	Bedrock
22-04	11-Jul-22	87.78	86.961	12.19	75.59	9.14 - 12.19	78.64-75.59	Bedrock
22-05	13-Jul-22	90.27	91.027	12.19	78.08	9.14 - 12.19	81.13-78.08	Bedrock
22-06	13-Jul-22	90.33	91.267	12.19	78.14	9.14 - 12.19	81.19-78.14	Bedrock

Notes:

m	metres
masl	metres above sea level
mbgs	metres below ground surface
--	Measurement not obtained.
[1]	Elevations are reported relative to a temporary bench mark (top bolt of fire hydrant located on Arthur Street South, adjacent to monitoring well BH-206) assigned an arbitary elevation of 100 masl

Sampling Program	Sample Locations	Sample ID	Sample Depth (mbgs)	Sample Analysis
Golder 2022 Sewer Trench DelineationProgram	TP22-01	TP22-01 SA1	0.9-1.1	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-01 SA2	2.0-2.2	
		TP22-01 SA3	3.2-3.6	
	TP22-02	TP22-02 SA1	1.25-1.75	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-02 SA2	2.25-2.75	
		TP22-02 SA3	3.75-4.2	
	TP22-03	TP22-03 SA1	0.1-0.4	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-03 SA2	0.4-1.1	
	TP22-04	TP22-04 SA1	1.5-1.7	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-04 SA2	2.7-3.0	
		TP22-04 SA3	3.7-4.0	
	TP22-05	TP22-05 SA1	0.9-1.2	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-05 SA2	2.3-2.5	
		TP22-05 SA3	3.8-4.0	
	TP22-06	TP22-06 SA1	0.6-1.7	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-06 SA2	1.7-3.1	
		TP22-06 SA3	3.1-3.8	
	TP22-07	TP22-07 SA1	0.8-1.0	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-07 SA2	2.0-2.3	
		TP22-07 SA3	3.5-3.8	
	TP22-08	TP22-08 SA1	1.0-1.2	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
		TP22-08 SA2	1.8-2.0	
		TP22-08 SA3	2.8-3.0	

Sampling Program	Sample Locations	Sample ID	Sample Depth (mbgs)	Sample Analysis
Golder 2022 Sampling Program	22-02	22-02 SA1	0 - 1.52	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-03	22-03 SA1	0 - 1.52	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-03	22-03 SA2	1.52 - 1.98	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-04	22-04 SA2; 22-04 DUP-1	2.13 - 2.74	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-04	22-04 SA7	7.0 - 7.46	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-05	22-05 SA2	0.3 - 0.61	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	22-06	22-06 SA1	0 - 1.22	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
Golder 2020 Sampling Program	TP4-01	TP4-01 SA1	0.3-0.5	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-02	TP4-02 SA1	0.75-1	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-10	TP4-10 SA1	1.75-2	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-12	TP4-12 SA1	0-0.5	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-13	TP4-13 SA1	0.0-0.65	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-15	TP4-15 SA1	0.3-0.5	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
	TP4-16	TP4-16 SA1	0-1.2	Metals, Cr, Cr VI, Hg, HWSB, PHCs F1-F4, PAHs, BTEX
DST Soil and Groundwater Remediation Report 2017	TP61	TP61 SGS1	0.1-0.4	Metals, PHC F1-F4, BTEX, PAHs
	TP62	TP62 SGS1	0.6-0.9	
	TP126-1	TP126-1 S1	0.0-0.8	Metals, BTEX,
	TP126-2	TP126-2 S1	0.0-0.8	
	BHMW14	BHMW14 SS2	0.6-1.0	Metals, PHC F1-F4, BTEX, PAHs

Notes

mbgs	metres below groundsurface
ppmv	parts per million by volume
PHC	petroleum hydrocarbons
VOC	Volatile organic compounds
M	Metals, hydride forming metals
ORP	Other Regulated Parameters - hot water soluble boron, hexavalent chromium, mercury, cyanide, electrical conductivity, sodium absorption ratio and pH
PCB	polychlorinated biphenyls
	Table to be read in conjunction with accompanying report

Location ID	Ground surface elevation (masl)	Top of pipe elevation (masl)	Golder 2022 Investigation			2015 DST Remediation			
			18-Jul-22			2015-03-04			
			Depth to water (mbtop)	Well Depth (mbgs)	Groundwater Elevation (masl)	Depth to water (mbtop)	Well Depth (mbgs)	Depth to water (mbgs)	Groundwater Elevation (masl)
BHMW31-1	82.91	83.87	--	--	--	5.89	6.00	4.93	77.98
BHMW126-1	90.54	91.47	--	--	--	4.83	6.20	3.82	86.64
BHMW14	90.20	90.93	--	--	--	4.19	6.20	3.26	86.74
22-02	88.79	89.469	7.33	7.92	82.14	--	--	--	--
22-03	86.22	86.959	NA	10.06	NA	--	--	--	--
22-04	87.78	86.961	9.40	12.19	77.57	--	--	--	--
22-05	90.27	91.027	9.17	12.19	81.86	--	--	--	--
22-06	90.33	91.267	9.44	12.19	81.83	--	--	--	--

Notes:

m	metres
masl	metres above sea level
mbtop	metres below top of pipe
mbgs	metres below ground surface
NA	not available
--	not applicable
	Table to be read in conjunction with accompanying report.

Sample Location	Monitoring Well	Well Depth (mbgs)	Screen Interval (mbgs)	Soil Description of Screened Interval	Sample ID	Sampling Date	Groundwater Analysis
22-02	22-02	7.92	4.88 - 7.92	Bedrock	22-02	07/18/2022	Metals, Cr VI, Hg, PHCs F1-F4, PAHs, BTEX
22-03	22-03	10.06	7.01 - 10.06	Bedrock	NA	NA	NA
22-04	22-04	12.19	9.14 - 12.19	Bedrock	22-04; DUP 01	07/18/2022	Metals, Cr VI, Hg, PHCs F1-F4, PAHs, BTEX
22-05	22-05	12.19	9.14 - 12.19	Bedrock	22-05	07/18/2022	Metals, Cr VI, Hg, PHCs F1-F4, PAHs, BTEX
22-06	22-06	12.19	9.14 - 12.19	Bedrock	22-06	07/18/2022	Metals, Cr VI, Hg, PHCs F1-F4, PAHs, BTEX
BHMW31-1	BHMW31-1	6.0	3.1 - 6.0	Bedrock	BHMW31-1	03/04/2015	Metals
					BHMW31-1	03/20/2016	Metals
BHMW126-1	BHMW126-1	6.2	3.9 - 6.2	Bedrock	BHMW126-1	03/31/2015	PHC F1-F4, BTEX, PAHs
					BHMW126-1	03/20/2016	PHC F1-F4, BTEX, PAHs
BHMW 14	BHMW 14	6.2	2.1 - 6.2	Bedrock	BHMW14	03/31/2015	PHC F1-F4, BTEX, PAHs
					BHMW14	03/20/2016	PHC F1-F4, BTEX, PAHs

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	TP22-01			TP22-02			TP22-03	
Sample ID			**TP22-01 SA1[2]**	**TP22-01 SA2[2]**	**TP22-01 SA3[2]**	**TP22-02 SA1**	**TP22-02 SA2**	**TP22-02 SA3**	**TP22-03 SA1**	**TP22-03 SA2**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**0.3-1.5**	**1.5-3.2**	**3.2-3.6**	**0.1-2.1**	**2.25-2.75**	**3.75-4.2**	**0.1-0.4**	**0.4-1.1**
Parameter										
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	**36**	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	140	<50	54	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	64	<50	**390**	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	21	22	13	23	21	15	22	19

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	TP22-04			TP22-05		
Sample ID			**TP22-04 SA1**	**TP22-04 SA2**	**TP22-04 SA3**	**TP22-05 SA1**	**TP22-05 SA2**	**TP22-05 SA3**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**1.5-1.7**	**2.7-3.0**	**3.7-4.0**	**0.9-1.2**	**2.3-2.5**	**3.8-4.0**
Parameter								
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<50	<50	54	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--
Moisture Content	%	--	19	30	19	19	28	23

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	TP22-06			TP22-07			BH22-02
Sample ID			**TP22-06 SA1**	**TP22-06 SA2**	**TP22-06 SA3**	**TP22-07 SA1**	**TP22-07 SA2**	**TP22-07 SA3**	**BH22-02 SA1**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**07/11/2022**
Sample Depth (mbgs)	**mbgs**		**0.6-1.7**	**1.7-3.1**	**3.1-3.8**	**0.8-1.0**	**2.0-2.3**	**3.5-3.8**	**0-1.4**
Parameter									
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.05
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<5
F2 (C10 to C16)	µg/g	10	<10	**96**	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	<10
F3 (C16 to C34)	µg/g	240	<50	88	84	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	<50
F4 (C34 to C50)	µg/g	120	<50	<50	120	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	NA
Moisture Content	%	--	26	17	26	25	24	25	15.40

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BH22-03		BH22-04		
Sample ID			**BH22-03 SA1**	**BH22-03 SA2**	**BH22-04 SA2**	**BH22-04 DUP1 (field dup of SA2)**	**BH22-04 SA7**
Date Sampled			**07/12/2022**	**07/12/2022**	**07/11/2022**	**07/11/2022**	**07/11/2022**
Sample Depth (mbgs)	**mbgs**		**0-1.5**	**1.5-2.0**	**2.1-2.7**	**2.1-2.7**	**7-7.5**
Parameter							
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05
p+m-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	NA	NA	NA	NA	NA
Moisture Content	%	--	16.70	23.60	21.00	16.30	25.10

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	BH22-05	BH22-06	TP4-01	TP4-02	TP4-10	TP4-12	TP4-13	TP4-15	TP4-16
Sample ID			**BH22-05 SA2**	**BH22-06 SA1**	**TP4-01 SA1**	**TP4-02 SA1**	**TP4-10 SA1**	**TP4-12 SA1**	**TP4-13 SA1**	**TP4-15 SA1**	**TP4-16 SA1**
Date Sampled			**07/13/2022**	**07/13/2022**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/08/2020**	**07/08/2020**
Sample Depth (mbgs)	**mbgs**		**0.3-0.6**	**0-1.2**	**0.3-0.5**	**0.75-1**	**1.75-2**	**0-0.5**	**0-0.7**	**0.3-0.5**	**0-1.2**
Parameter											
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	--	--	--	--	--	--	--
p+m-Xylene	µg/g	--	<0.05	<0.05	--	--	--	--	--	--	--
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	NA	NA	NA	NA	NA	NA	NA	NA	NA
Moisture Content	%	--	7.50	7.70	11.4	13.2	26.6	5.9	11.4	8.8	8.2

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	TP61	TP62	TP126-1	TP126-2	BHMW14	BHM15
Sample ID			**TP61 SGS1**	**TP62 SGS1**	**TP126-1 S1**	**TP126-2 S1**	**BHMW14 SS2**	**BHMW15 SS5[2]**
Date Sampled			**--[4]**	**--[4]**	**--[4]**	**--[4]**	**--[4]**	**--[4]**
Sample Depth (mbgs)	**mbgs**		**0.1-0.4**	**0.6-0.9**	**0.0-0.8**	**0.0-0.8**	**0.6-1.0**	**2.4-3.0**
Parameter								
Benzene	µg/g	0.02	--	--	<0.001	<0.001	<0.05	<0.05
Toluene	µg/g	0.20	--	--	<0.002	<0.002	<0.05	<0.05
Ethylbenzene	µg/g	0.05	--	--	<0.002	<0.002	<0.05	<0.05
o-Xylene	µg/g	--	--	--	<0.002	<0.002	<0.05	<0.05
p+m-Xylene	µg/g	--	--	--	<0.002	<0.002	<0.1	<0.1
Xylenes (Total)	µg/g	0.05	--	--	<0.002	<0.002	<0.15	--
F1 (C6 to C10)	µg/g	25	<20	<20	--	--	<20	**40**
F1 (C6 to C10) minus BTEX	µg/g	25	--	--	--	--	--	--
F2 (C10 to C16)	µg/g	10	**4000**	**2500**	--	--	<10	**2,200**
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	**13000**	**23000**	--	--	<10	**930**
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	**18000**	**15000**	--	--	<10	<10
Reached Baseline at C50	--	--	--	--	--	--	--	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--
Moisture Content	%	--	--	--	--	--	--	--

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	Off-site sample location included for reference purposes only
(3)	Location of sample not provided in source report
(4)	No date was provided in the source report.

Sample Location			TP22-01			TP22-02		
Sample ID	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**TP22-01 SA1[3]**	**TP22-01 SA2[3]**	**TP22-01 SA3[3]**	**TP22-02 SA1**	**TP22-02 SA2**	**TP22-02 SA3**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**0.3-1.5**	**1.5-3.2**	**3.2-3.6**	**0.1-2.1**	**2.25-2.75**	**3.75-4.2**
Parameter								
Acenaphthene	µg/g	0.072	0.0051	ND	ND	0.043	0.016	ND
Acenaphthylene	µg/g	0.093	0.005	ND	ND	0.024	0.008	ND
Anthracene	µg/g	0.16	0.014	ND	0.075	0.14	0.042	ND
Benz(a)anthracene	µg/g	0.36	0.056	0.0079	0.25	**0.39**	0.11	0.012
Benzo(a)pyrene	µg/g	0.3	0.047	0.0069	0.22	**0.32**	0.086	0.011
Benzo(b)fluoranthene	µg/g	0.47	0.067	0.0092	0.29	0.4	0.12	0.017
Benzo(g,h,i)perylene	µg/g	0.68	0.028	ND	0.12	0.16	0.045	0.0075
Benzo(k)fluoranthene	µg/g	0.48	0.021	ND	0.11	0.15	0.037	0.0058
Chrysene	µg/g	2.8	0.045	0.0065	0.22	0.32	0.091	0.011
Dibenz(a,h)anthracene	µg/g	0.1	0.0064	ND	ND	0.036	0.011	ND
Fluoranthene	µg/g	0.56	0.12	0.017	0.48	**0.85**	0.24	0.026
Fluorene	µg/g	0.12	0.0063	ND	ND	0.083	0.026	ND
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.028	ND	0.12	0.16	0.048	0.0075
1 Methlynaphthalene	µg/g	0.59[2]	ND	ND	ND	0.015	ND	ND
2 Methlynaphthalene	µg/g	0.59[2]	ND	ND	ND	0.02	0.0059	ND
1 and 2 Methlynaphthalene (2)	µg/g	0.59	--	--	--	--	--	--
Naphthalene	µg/g	0.09	ND	ND	ND	0.058	0.015	ND
Phenanthrene	µg/g	0.69	0.056	0.0093	0.29	0.61	0.17	0.015
Pyrene	µg/g	1	0.096	0.015	0.38	0.66	0.19	0.022

Sample Location			TP22-03		TP22-04			TP22-05		
Sample ID	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**TP22-03 SA1**	**TP22-03 SA2**	**TP22-04 SA1**	**TP22-04 SA2**	**TP22-04 SA3**	**TP22-05 SA1**	**TP22-05 SA2**	**TP22-05 SA3**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**0.1-0.4**	**0.4-1.1**	**1.5-1.7**	**2.7-3.0**	**3.7-4.0**	**0.9-1.2**	**2.3-2.5**	**3.8-4.0**
Parameter										
Acenaphthene	µg/g	0.072	ND	ND	0.0069	**0.074**	0.0062	ND	ND	ND
Acenaphthylene	µg/g	0.093	ND	ND	0.013	ND	0.0051	ND	ND	ND
Anthracene	µg/g	0.16	ND	ND	0.026	**0.19**	0.021	0.014	ND	ND
Benz(a)anthracene	µg/g	0.36	0.006	ND	0.069	**0.66**	0.1	0.037	ND	0.007
Benzo(a)pyrene	µg/g	0.3	0.0061	ND	0.06	**0.58**	0.085	0.03	ND	0.0067
Benzo(b)fluoranthene	µg/g	0.47	0.0091	0.0058	0.078	**0.78**	0.12	0.041	ND	0.0085
Benzo(g,h,i)perylene	µg/g	0.68	ND	ND	0.031	0.29	0.043	0.018	ND	ND
Benzo(k)fluoranthene	µg/g	0.48	ND	ND	0.024	0.29	0.036	0.013	ND	ND
Chrysene	µg/g	2.8	0.0056	ND	0.055	0.56	0.082	0.03	ND	0.0054
Dibenz(a,h)anthracene	µg/g	0.1	ND	ND	0.0073	0.072	0.01	ND	ND	ND
Fluoranthene	µg/g	0.56	0.013	0.0067	0.16	**1.3**	0.19	0.082	ND	0.014
Fluorene	µg/g	0.12	ND	ND	0.015	0.085	0.0088	0.0063	ND	ND
Indeno(1,2,3-cd)pyrene	µg/g	0.23	ND	ND	0.033	**0.3**	0.045	0.017	ND	ND
1 Methlynaphthalene	µg/g	0.59[2]	ND	ND	ND	ND	ND	ND	ND	ND
2 Methlynaphthalene	µg/g	0.59[2]	ND	ND	ND	ND	ND	ND	ND	ND
1 and 2 Methlynaphthalene (2)	µg/g	0.59	--	--	--	--	--	--	--	--
Naphthalene	µg/g	0.09	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	µg/g	0.69	0.0051	ND	0.1	**0.74**	0.085	0.048	ND	0.0057
Pyrene	µg/g	1	0.011	0.0057	0.12	1	0.15	0.066	ND	0.013

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	TP22-06			TP22-07			BH22-02
Sample ID			TP22-06 SA1	TP22-06 SA2	TP22-06 SA3	TP22-07 SA1	TP22-07 SA2	TP22-07 SA3	BH22-02 SA1
Date Sampled			10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	10/19/2022	07/11/2022
Sample Depth (mbgs)	mbgs		0.6-1.7	1.7-3.1	3.1-3.8	0.8-1.0	2.0-2.3	3.5-3.8	0-1.4
Parameter									
Acenaphthene	µg/g	0.072	ND	0.0074	0.05	ND	ND	ND	<0.05
Acenaphthylene	µg/g	0.093	ND	ND	0.056	ND	0.0076	ND	<0.05
Anthracene	µg/g	0.16	ND	0.016	**0.18**	0.0051	0.0061	ND	<0.05
Benz(a)anthracene	µg/g	0.36	0.012	0.05	**0.41**	0.019	0.033	ND	<0.05
Benzo(a)pyrene	µg/g	0.3	0.011	0.041	**0.33**	0.016	0.025	ND	0.05
Benzo(b)fluoranthene	µg/g	0.47	0.015	0.06	0.43	0.023	0.036	ND	0.05
Benzo(g,h,i)perylene	µg/g	0.68	0.0066	0.025	0.16	0.0086	0.013	ND	<0.05
Benzo(k)fluoranthene	µg/g	0.48	ND	0.018	0.14	0.0072	0.011	ND	<0.05
Chrysene	µg/g	2.8	0.011	0.038	0.3	0.016	0.025	ND	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	ND	0.0055	0.039	ND	ND	ND	<0.05
Fluoranthene	µg/g	0.56	0.025	0.11	**0.91**	0.041	0.042	ND	0.11
Fluorene	µg/g	0.12	ND	0.0073	0.093	ND	ND	ND	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.0063	0.026	0.18	0.0091	0.014	ND	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	ND	ND	0.016	ND	ND	ND	--
2 Methlynaphthalene	µg/g	0.59[2]	ND	ND	0.018	ND	ND	ND	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	--	--	--	--	--	--	<0.05
Naphthalene	µg/g	0.09	ND	ND	0.054	ND	ND	ND	<0.05
Phenanthrene	µg/g	0.69	0.012	0.054	0.55	0.021	0.013	ND	0.07
Pyrene	µg/g	1	0.022	0.086	0.73	0.034	0.035	ND	0.09

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BH22-03		BH22-04			BH22-05	BH22-06
Sample ID			BH22-03 SA1	BH22-03 SA2	BH22-04 SA2	BH22-04 DUP1 (field dup of SA2)	BH22-04 SA7	BH22-05 SA2	BH22-06 SA1
Date Sampled			07/12/2022	07/12/2022	07/11/2022	07/11/2022	07/11/2022	07/13/2022	07/13/2022
Sample Depth (mbgs)	mbgs		0-1.5	1.5-2.0	2.1-2.7	2.1-2.7	7.50	0.3-0.6	0-1.2
Parameter									
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	**0.23**	<0.05	**0.19**	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	**0.6**	<0.05	**0.64**	0.08	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	**0.43**	<0.05	**0.46**	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	**0.9**	<0.05	**0.69**	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	0.20	<0.05	0.15	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	0.39	<0.05	0.38	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	<0.05	0.58	<0.05	0.51	0.09	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	<0.05	**1.47**	<0.05	**1.19**	0.23	<0.05	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	0.15	<0.05	0.12	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	<0.05	0.67	<0.05	0.51	0.16	<0.05	<0.05
Pyrene	µg/g	1	<0.05	**1.24**	<0.05	**1.06**	0.19	<0.05	<0.05

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	TP4-01	TP4-02	TP4-10	TP4-12	TP4-13	TP4-15	TP4-16
Sample ID			**TP4-01 SA1**	**TP4-02 SA1**	**TP4-10 SA1**	**TP4-12 SA1**	**TP4-13 SA1**	**TP4-15 SA1**	**TP4-16 SA1**
Date Sampled			**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/08/2020**	**07/08/2020**
Sample Depth (mbgs)	**mbgs**		**0.3-0.5**	**0.75-1**	**1.75-2**	**0-0.5**	**0.0-0.65**	**0.3-0.5**	**0-1.2**
Parameter									
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	<0.05	<0.05	<0.05	<0.05	0.07	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	<0.05	<0.05	0.06	<0.05	0.12	<0.05	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	<0.05	<0.05	<0.05	<0.05	0.05	<0.05	<0.05
Pyrene	µg/g	1	<0.05	<0.05	0.05	<0.05	0.10	<0.05	<0.05

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	TP31			TP61	TP62	BHMW14	BHMW15
Sample ID			**TP31 SGS2[3]**	**TP31 SGS3[3]**	**TP31 SGS5[3]**	**TP61 SGS1**	**TP62 SGS1**	**BHMW14 SS2**	**BHMW15 SS5[3]**
Date Sampled			--[6]	--[6]	--[6]	--[6]	--[6]	--[6]	--[6]
Sample Depth (mbgs)	**mbgs**		**0.4**	**0.9**	**1.2**	**0.1-0.4**	**0.6-0.9**	**0.6-1.0**	**2.4-3.0**
Parameter									
Acenaphthene	µg/g	0.072	<0.02	<0.02	<0.02	<0.01	<1	<0.02	**0.24**
Acenaphthylene	µg/g	0.093	<0.02	<0.02	<0.02	<0.01	<1	<0.02	**0.2**
Anthracene	µg/g	0.16	<0.02	<0.02	<0.02	<0.01	<1	<0.02	<0.02
Benz(a)anthracene	µg/g	0.36	<0.02	<0.02	0.1	<0.01	<1	<0.02	<0.02
Benzo(a)pyrene	µg/g	0.3	<0.02	<0.02	0.08	<0.01	<1	<0.02	<0.02
Benzo(b)fluoranthene	µg/g	0.47	<0.02	<0.02	0.08	<0.01	<1	<0.02	<0.02
Benzo(g,h,i)perylene	µg/g	0.68	<0.02	<0.02	0.06	<0.01	<1	<0.02	<0.02
Benzo(k)fluoranthene	µg/g	0.48	<0.02	<0.02	0.04	<0.01	<1	<0.02	<0.02
Chrysene	µg/g	2.8	<0.02	<0.02	0.1	<0.01	<1	<0.02	<0.02
Dibenz(a,h)anthracene	µg/g	0.1	<0.02	<0.02	<0.02	0.02	<1	<0.02	<0.02
Fluoranthene	µg/g	0.56	0.02	<0.02	0.24	<0.01	<1	<0.02	<0.02
Fluorene	µg/g	0.12	<0.02	<0.02	<0.02	<0.01	<1	<0.02	**0.18**
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.02	<0.02	0.06	0.02	<1	<0.02	<0.02
1 Methlynaphthalene	µg/g	0.59[2]	0.02	<0.02	<0.02	<0.01	**2**	<0.02	0.1
2 Methlynaphthalene	µg/g	0.59[2]	0.04	<0.02	<0.02	<0.01	**2**	<0.02	0.08
1 and 2 Methlynaphthalene (2)	µg/g	0.59	0.06	--	--	--	**4**	--	--
Naphthalene	µg/g	0.09	0.02	<0.02	<0.02	<0.01	<1	<0.02	**1.2**
Phenanthrene	µg/g	0.69	0.02	<0.02	0.14	0.02	<1	<0.02	<0.02
Pyrene	µg/g	1	0.02	<0.02	0.2	<0.01	<1	<0.02	<0.02

Notes:

G / S	Guideline / Standard
--	Not analyzed
ND	Not detected
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	The methylnapthalene standards are applicable to both 1-methylnapthalene and 2-methylnapthalene, with the provision that if both are detected, the sum of the two must not exceed the standard.
(3)	Off-site sample location included for reference purposes only
(4)	Location of sample not provided in source report
(5)	As noted in DST Remediation Report, exceedance remediated with confirmatory sample BLD 126-2 SS30 (2017 DST Remediation Report)
(6)	No date was provided in the source report.

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	TP22-01			TP22-02		
eck the master sh			**TP22-01 SA1[2]**	**TP22-01 SA2[2]**	**TP22-01 SA3[2]**	**TP22-02 SA1**	**TP22-02 SA2**	**TP22-02 SA3**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**0.3-1.5**	**1.5-3.2**	**3.2-3.6**	**0.1-2.1**	**2.25-2.75**	**3.75-4.2**
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/g	18	1.5	1.4	1.9	1.6	2.4	2.3
Barium	µg/g	220	190	200	140	180	220	80
Beryllium	µg/g	2.5	0.62	0.64	0.5	0.57	0.84	0.42
Boron	µg/g	36	5.5	6.2	6.2	6.5	7.4	<5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	0.13	0.14	0.12	0.12	0.1	0.12
Calcium	µg/g	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	55	62	40	55	55	25
Cobalt	µg/g	21	15	15	11	14	17	8.8
Copper	µg/g	92	28	31	23	29	31	18
Iron	µg/g	--	--	--	--	--	--	--
Lead	µg/g	120	10	13	12	12	8.2	13
Molybdenum	µg/g	2	<0.5	0.5	0.63	0.57	<0.5	0.65
Nickel	µg/g	82	33	38	27	34	34	18
Selenium	µg/g	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	µg/g	0.5	0.26	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--
Thallium	µg/g	1	0.29	0.3	0.23	0.29	0.32	0.17
Uranium	µg/g	2.5	0.75	0.7	0.62	0.72	0.63	0.55
Vanadium	µg/g	86	61	65	48	58	72	30
Zinc	µg/g	290	87	87	56	74	98	39
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--

Sample Location			TP22-03		TP22-04			TP22-05		
eck the master sh	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**TP22-03 SA1**	**TP22-03 SA2**	**TP22-04 SA1**	**TP22-04 SA2**	**TP22-04 SA3**	**TP22-05 SA1**	**TP22-05 SA2**	**TP22-05 SA3**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**
Sample Depth (mbgs)	**mbgs**		**0.1-0.4**	**0.4-1.1**	**1.5-1.7**	**2.7-3.0**	**3.7-4.0**	**0.9-1.2**	**2.3-2.5**	**3.8-4.0**
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/g	18	1.6	2	1.7	1.5	1.9	1.7	1.4	<1
Barium	µg/g	220	**250**	82	200	190	81	210	**260**	140
Beryllium	µg/g	2.5	0.68	0.56	0.65	0.68	0.44	0.63	0.7	0.41
Boron	µg/g	36	<5	<5	6.3	7.8	<5	6.7	5.3	<5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	0.15	0.17	0.17	<0.1	0.14	0.11	<0.1	<0.1
Calcium	µg/g	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	**76**	38	64	68	25	66	69	37
Cobalt	µg/g	21	17	11	16	16	8	16	18	9.8
Copper	µg/g	92	36	17	31	32	14	32	36	18
Iron	µg/g	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	10	12	12	9.6	11	11	7.1	5.6
Molybdenum	µg/g	2	0.71	0.5	0.62	0.64	<0.5	0.56	0.66	0.57
Nickel	µg/g	82	44	25	39	41	17	40	40	21
Selenium	µg/g	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	µg/g	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--	--
Thallium	µg/g	1	0.34	0.16	0.3	0.3	0.15	0.3	0.35	0.17
Uranium	µg/g	2.5	0.77	0.59	0.73	0.79	0.57	0.79	0.89	0.67
Vanadium	µg/g	86	76	36	67	69	31	65	85	46
Zinc	µg/g	290	98	43	83	80	36	80	100	49
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--

Sample Location			TP22-06			TP22-07			BH22-02
eck the master sh	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**TP22-06 SA1**	**TP22-06 SA2**	**TP22-06 SA3**	**TP22-07 SA1**	**TP22-07 SA2**	**TP22-07 SA3**	**BH22-02 SA1**
Date Sampled			**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**10/19/2022**	**07/11/2022**
Sample Depth (mbgs)	**mbgs**		**0.6-1.7**	**1.7-3.1**	**3.1-3.8**	**0.8-1.0**	**2.0-2.3**	**3.5-3.8**	**0-1.4**
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.8
Arsenic	µg/g	18	1.3	1.7	1.5	1.2	ND	2	3
Barium	µg/g	220	**260**	190	210	**280**	**260**	200	76.8
Beryllium	µg/g	2.5	0.65	0.62	0.61	0.72	0.68	0.68	0.6
Boron	µg/g	36	<5	6.4	5.3	5.2	<5	6.1	9
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	0.11
Cadmium	µg/g	1.2	0.14	0.13	0.15	0.16	0.11	<0.1	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	**75**	53	54	**91**	**81**	50	26
Cobalt	µg/g	21	18	16	15	21	18	15	8.8
Copper	µg/g	92	37	28	31	43	39	30	15.8
Iron	µg/g	--	--	--	--	--	--	--	--
Lead	µg/g	120	14	14	17	10	11	7.8	24
Molybdenum	µg/g	2	0.6	0.81	0.71	0.56	0.67	0.59	0.6
Nickel	µg/g	82	43	35	33	54	46	31	17
Selenium	µg/g	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.8
Silver	µg/g	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.5
Sodium	µg/g	NA	--	--	--	--	--	--	--
Thallium	µg/g	1	0.34	0.31	0.3	0.39	0.35	0.3	<0.5
Uranium	µg/g	2.5	0.89	0.73	0.79	0.93	0.9	0.85	0.55
Vanadium	µg/g	86	81	58	67	**90**	83	73	35
Zinc	µg/g	290	110	75	90	120	100	93	34
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	0.14
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	BH22-03		BH22-04			BH22-05
eck the master sh			**BH22-03 SA1**	**BH22-03 SA2**	**BH22-04 SA2**	**BH22-04 DUP1 (field dup of SA2)**	**BH22-04 SA7**	**BH22-05 SA2**
Date Sampled			**07/12/2022**	**07/12/2022**	**07/11/2022**	**07/11/2022**	**07/11/2022**	**07/13/2022**
Sample Depth (mbgs)	**mbgs**		**0-1.5**	**1.5-2.0**	**2.1-2.7**	**2.1-2.7**	**7-7.5**	**0.3-0.6**
Antimony	µg/g	1.3	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	2	4	2	2	2	3
Barium	µg/g	220	**239**	106	**221**	106	**434**	122
Beryllium	µg/g	2.5	0.7	0.6	0.4	0.5	0.9	0.4
Boron	µg/g	36	8	9	5	22	10	13
Boron (Hot Water Extractable)	µg/g	--	0.12	0.18	0.13	0.59	1.1	<0.1
Cadmium	µg/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	59	28	58	29	**118**	25
Cobalt	µg/g	21	14.3	10.1	14	11.8	**27.1**	8.6
Copper	µg/g	92	30	18.7	30.1	19.1	57.2	12.8
Iron	µg/g	--	--	--	--	--	--	--
Lead	µg/g	120	12	17	10	14	8	10
Molybdenum	µg/g	2	0.6	0.9	0.8	0.7	1.2	0.5
Nickel	µg/g	82	35	21	35	25	75	18
Selenium	µg/g	1.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium	µg/g	NA	--	--	--	--	--	--
Thallium	µg/g	1	<0.5	<0.5	<0.5	<0.5	0.5	<0.5
Uranium	µg/g	2.5	0.67	0.53	0.75	0.52	2.27	0.55
Vanadium	µg/g	86	66.2	32.7	61.2	32.3	**125**	29.3
Zinc	µg/g	290	81	48	75	35	152	43
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--
Mercury	µg/g	0.27	0.2	0.14	0.14	0.22	0.1	<0.1
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	BH22-06	TP4-01	TP4-02	TP4-10	TP4-12	TP4-13	TP4-15	TP4-16
eck the master sh			**BH22-06 SA1**	**TP4-01 SA1**	**TP4-02 SA1**	**TP4-10 SA1**	**TP4-12 SA1**	**TP4-13 SA1**	**TP4-15 SA1**	**TP4-16 SA1**
Date Sampled			**07/13/2022**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/07/2020**	**07/08/2020**	**07/08/2020**
Sample Depth (mbgs)	**mbgs**		**0-1.2**	**0.3-0.5**	**0.75-1**	**1.75-2**	**0-0.5**	**0.0-0.65**	**0.3-0.5**	**0-1.2**
Antimony	µg/g	1.3	<0.8	1.10	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	4	4	2	1	4	3	4	3
Barium	µg/g	220	83.9	164	120	**404**	117	**242**	74	99
Beryllium	µg/g	2.5	0.4	0.5	<0.5	0.5	0.5	<0.5	<0.5	<0.5
Boron	µg/g	36	13	12	5	<5	9	<5	7	14
Boron (Hot Water Extractable)	µg/g	--	<0.1	0.17	0.27	0.17	0.35	0.26	0.27	0.14
Cadmium	µg/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	20	23	29	**111**	23	59	18	18
Cobalt	µg/g	21	7.9	7	9	**21**	9	12	8	7
Copper	µg/g	92	12.1	34	15	38	30	38	18	13
Iron	µg/g	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	28	67	10	10	38	24	87	10
Molybdenum	µg/g	2	0.6	1.3	<0.5	<0.5	0.8	1.1	1.0	<0.5
Nickel	µg/g	82	14	17	17	52	16	31	15	11
Selenium	µg/g	1.5	<0.8	0.6	<0.4	0.6	0.7	0.6	0.4	0.4
Silver	µg/g	0.5	<0.5	0.20	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--	--
Thallium	µg/g	1	<0.5	<0.4	<0.4	0.50	<0.4	<0.4	<0.4	<0.4
Uranium	µg/g	2.5	0.51	0.8	0.7	1.3	0.5	0.9	<0.5	<0.5
Vanadium	µg/g	86	25.2	27	38	**100**	28	56	26	20
Zinc	µg/g	290	61	154	45	159	45	106	79	24
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	0.11	0.13	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	7.54	7.28

Sample Location			TP61	TP62	TP126-1	TP126-2	BHMW14	BHMW15	**TP31**		
eck the master sh	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**TP61 SGS1**	**TP62 SGS1**	**TP126-1 S1**	**TP126-2 S1**	**BHMW14 SS2**	**BHMW15 SS5[2]**	**TP31 SGS2**	**TP31 SGS3**	**TP31 SGS5**
Date Sampled			**--[3]**	**--[3]**	**--[3]**	**--[3]**	**--[3]**	**--[3]**	**--[2]**	**--[2]**	**--[2]**
Sample Depth (mbgs)	**mbgs**		**0.1-0.4**	**0.6-0.9**	**0.0-0.8**	**0.0-0.8**	**0.6-1.0**	**2.4-3.0**	**0.40**	**0.90**	**1.20**
Antimony	µg/g	1.3	<1	<1	<0.8	<0.8	<1	<1	<1	<1	<1
Arsenic	µg/g	18	2	1	3.7	2.9	1	<1	1	<1	<1
Barium	µg/g	220	20	<10	123	88.9	130	**330**	70	20	30
Beryllium	µg/g	2.5	<0.5	<0.5	0.5	0.7	<0.5	0.5	<0.5	<0.5	<0.5
Boron	µg/g	36	--	--	--	--	--	--	--	--	--
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	<0.5	<0.5	0.7	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	2400	600	--	--	4600	39,000	7200	4000	7000
Chromium (Total)	µg/g	70	5	<5	39.2	24.1	25	70	15	<5	5
Cobalt	µg/g	21	5	5	9.6	9.2	10	15	5	<5	<5
Copper	µg/g	92	<5	<5	29.1	18.9	15	35	15	10	10
Iron	µg/g	--	3800	800	--	--	22000	35,000	13000	6800	7800
Lead	µg/g	120	4	<1	23.1	13.5	14	12	22	2	10
Molybdenum	µg/g	2	1	<1	0.5	0.5	<1	<1	<1	<1	<1
Nickel	µg/g	82	40	35	31.4	20.6	20	40	15	<5	5
Selenium	µg/g	1.5	<1	<1	<0.4	<0.4	<1	<1	<1	<1	<1
Silver	µg/g	0.5	<0.3	<0.3	<0.2	<0.2	<0.3	<0.3	<0.3	<0.3	<0.3
Sodium	µg/g	NA	<200	<200	--	--	<200	1,200	<200	<200	<200
Thallium	µg/g	1	<1	<1	0.2	0.2	<1	<1	<1	<1	<1
Uranium	µg/g	2.5	--	--	--	--	--	--	--	--	--
Vanadium	µg/g	86	<10	<10	49.7	27.4	30	70	20	10	10
Zinc	µg/g	290	<20	<20	81.8	33.1	20	80	**520**	<20	**460**
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
	Exceedance interpreted to be naturally occuring
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	Off-site sample location included for reference purposes only
(3)	No date was provided in the source report.

Sample Description	Unit	MECP Table 1 Standard (1)	22-02	22-04	DUP-01 (dup of 22-04)	22-05	22-06	Trip Blank	Field Blank
Date Sampled			**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**
Benzene	µg/L	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.8	<0.20	<0.20	<0.20	0.23	0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Xylenes (Total)	µg/L	72	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
F1 (C6 - C10)	µg/L	420	<25	<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	<25	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	<100	<100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	<100	<100	<100	<100	<100	<100	<100
F4 (C34 to C50)	µg/L	500	<100	<100	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L								

Sample Description	Unit	MECP Table 1 Standard (1)	Equipment Blank	BHMW14	BHMW14	BHMW14	BHMW126-1	BHMW126-1	22-01 (2)
Date Sampled			07/18/2022	03/20/2016	03/31/2015	3/19-20/2014	03/20/2016	03/31/2015	07/18/2022
Benzene	µg/L	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.26
Ethylbenzene	µg/L	0.5	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10
Xylenes (Total)	µg/L	72	<0.20	<0.40	<0.40	<0.40	<0.40	<0.40	<0.20
F1 (C6 - C10)	µg/L	420	<25	<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	<25	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	<100	<100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L	500	<100	<200	<200	<200	<200	<200	<100
F4 (C34 to C50)	µg/L	500	<100	<200	<200	<200	<200	<200	<100
Gravimetric Heavy Hydrocarbons	µg/L			NA	NA		NA	NA	

Sample Description	Unit	MECP Table 1 Standard (1)	DUP 01 (dup of 22-01) (2)	137-3 (2)	137-1 (2)	14-01 (2)	14-02 (2)	BHMW15 (2)
Date Sampled			**07/18/2022**	**07/22/2022**	**08/05/2021**	**09/09/2020**	**08/05/2020**	**3/20/2014**
Benzene	µg/L	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.8	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Ethylbenzene	µg/L	0.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20
Xylenes (Total)	µg/L	72	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40
F1 (C6 - C10)	µg/L	420	<25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	<25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L	150	<100	**940**	<100	<100	<100	**15,000**
F3 (C16 to C34)	µg/L	500	<100	**1,000**	<100	<100	<100	**8,200**
F4 (C34 to C50)	µg/L	500	<100	<100	<100	<100	<100	<200
Gravimetric Heavy Hydrocarbons	µg/L				NA	NA	NA	

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards,
(1)	Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Groundwater
(2)	Off-site sample location included for reference purposes only

Sample Description	Unit	MECP Table 1 Standard (1)	22-02	22-04	DUP-01 (dup of 22-04)	22-05	22-06	Trip Blank	BHMW14	BHMW14
Date Sampled			**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**07/18/2022**	**03/20/2016**	**03/31/2015**
Acenaphthene	µg/L	4.1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Acenaphthylene	µg/L	1	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Anthracene	µg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050
Benzo(a)anthracene	µg/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.010	<0.010
Benzo(b/j)fluoranthene	µg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Benzo(k)fluoranthene	µg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050
Chrysene	µg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.050	<0.050
Dibenz(a,h)anthracene	µg/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Fluoranthene	µg/L	0.4	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Fluorene	µg/L	120	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	µg/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
1-Methylnaphthalene	µg/L	2	--	--	--	--	--	--	<0.050	<0.050
2-Methylnaphthalene	µg/L	2	--	--	--	--	--	--	<0.050	<0.050
Methylnaphthalene, 2-(1-)	µg/L	2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.071	<0.071
Naphthalene	µg/L	7	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050
Phenanthrene	µg/L	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.030	<0.030
Pyrene	µg/L	0.2	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.050	<0.050

Sample Description	Unit	MECP Table 1 Standard (1)	BHMW14	BHMW126-1	BHMW126-1	BHMW15 (2)	137-1 (2)	DUP1 (dup of 137-1) (2)	137-3 (2)
Date Sampled			**3/14/2014**	**03/20/2016**	**03/31/2015**	**3/14/2014**	**03/04/2015**	**03/04/2015**	**03/04/2015**
Acenaphthene	µg/L	4.1	<0.050	<0.050	<0.050	**4.2**	0.050	0.550	<0.050
Acenaphthylene	µg/L	1	<0.050	<0.050	<0.050	<1.0	<0.050	<0.050	<0.050
Anthracene	µg/L	0.1	<0.050	<0.050	<0.050	**0.58**	<0.050	<0.050	<0.050
Benzo(a)anthracene	µg/L	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(a)pyrene	µg/L	0.01	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Benzo(b/j)fluoranthene	µg/L	0.1	-	<0.050	<0.050	-	<0.050	<0.050	<0.050
Benzo(g,h,i)perylene	µg/L	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Benzo(k)fluoranthene	µg/L	0.1	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Chrysene	µg/L	0.1	<0.050	<0.050	<0.050	0.055	<0.050	<0.050	<0.050
Dibenz(a,h)anthracene	µg/L	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Fluoranthene	µg/L	0.4	<0.050	<0.050	<0.050	0.15	<0.050	<0.050	<0.050
Fluorene	µg/L	120	<0.050	<0.050	<0.050	3.0	<0.050	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	µg/L	0.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
1-Methylnaphthalene	µg/L	2	<0.050	<0.050	<0.050	**18**	<0.050	<0.050	<0.050
2-Methylnaphthalene	µg/L	2	<0.050	<0.050	<0.050	0.83	<0.050	<0.050	<0.050
Methylnaphthalene, 2-(1-)	µg/L	2	<0.071	<0.071	<0.071	**19**	<0.071	<0.071	<0.071
Naphthalene	µg/L	7	<0.050	<0.050	<0.050	<2.0	<0.050	<0.050	<0.050
Phenanthrene	µg/L	0.1	<0.030	<0.030	<0.030	**0.97**	<0.030	<0.030	<0.030
Pyrene	µg/L	0.2	<0.050	<0.050	<0.050	**0.39**	<0.050	<0.050	<0.050

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Groundwater
(2)	Off-site sample location included for reference purposes only

Table 6c - Groundwater Analytical Results - Metals

Sample ID	Unit	MECP Table 1 Standard (1)	22-02	22-04	DUP-01 (dup of 22-04)	22-05	22-06	Trip Blank	BHMW14	BHMW15	BHMW31-1	BHMW31-1
Date Sampled			07/18/2022	07/18/2022	07/18/2022	07/18/2022	07/18/2022	07/18/2022	3/14/2014	3/14/2014	03/04/2015	03/20/2016
Dissolved Antimony (Sb)	µg/L	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.50	<0.50	<0.50	<0.5
Dissolved Arsenic (As)	µg/L	13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1
Dissolved Barium (Ba)	µg/L	610	127	38.1	37.9	92.8	104	<2.0	120.0	130.0	100	40
Dissolved Beryllium (Be)	µg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.50	<0.50	<0.50	<0.5
Dissolved Boron (B)	µg/L	1700	104	194	197	220	227	<10.0	26.0	26.0	60	51
Dissolved Cadmium (Cd)	µg/L	0.5	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.1
Dissolved Chromium (Cr)	µg/L	11	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<5.0	<5.0	<5.0	<5
Dissolved Cobalt (Co)	µg/L	3.8	0.53	0.63	0.57	0.56	<0.50	<0.50	<0.50	<0.50	2.8	<0.5
Dissolved Copper (Cu)	µg/L	5	2.4	1.7	1.6	1.3	1.4	<1.0	1.4	<1.0	2.7	2
Dissolved Lead (Pb)	µg/L	1.9	<0.50	0.77	0.64	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5
Dissolved Molybdenum (Mo	µg/L	23	1.47	2.49	2.35	1.13	1.7	<0.50	<0.50	<0.50	5.6	<0.5
Dissolved Nickel (Ni)	µg/L	14	3.5	8	7.9	3.4	1	<1.0	<1.0	<1.0	8.3	8
Dissolved Selenium (Se	µg/L	5	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2
Dissolved Silver (Ag)	µg/L	0.3	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.1
Dissolved Sodium (Na)	µg/L		-	-	-	-	-	-	19000	44000	61000	83000
Dissolved Thallium (Tl)	µg/L	0.5	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.050	<0.050	<0.050	<0.5
Dissolved Uranium (U)	µg/L	8.9	1.75	2.02	2.07	0.99	0.96	<0.50	0.3	<0.10	0.95	1
Dissolved Vanadium (V	µg/L	3.9	0.46	<0.40	<0.40	<0.40	<0.40	<0.40	<0.50	<0.50	<0.50	<0.5
Dissolved Zinc (Zn)	µg/L	160	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.4	8.8	37	7
Mercury	µg/L	0.1	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	-	-	-	-
Chromium IV	µg/L	25	<2	<2	<2	<2	<2	<2	-	-	-	-

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Groundwater
(2)	Off-site sample location included for reference purposes only

APPENDIX F

Rationale for Naturally Occurring Barium, Chromium, Cobalt and Vanadium in Ottawa Marine Clay Above Generic Standards to Support a Record of Site Condition (RSC)

TECHNICAL MEMORANDUM

DATE January 18, 2023 **Project No.** 19124906

TO Katherine Constantine
Canada Lands Company (CLC)

FROM Keith Holmes, MSc, PGeo **EMAIL** keith.p.holmes@wsp.com

INTENT TO APPLY SECTION 49.1 – NATURAL BACKGROUND METALS, WATERIDGE DEVELOPMENT, FORMER CFB ROCKCLIFFE, OTTAWA, ONTARIO

WSP Canada Inc. (WSP, formerly Golder Associates Ltd.) has prepared this memorandum in support of the Record of Site Condition (RSC) filing for the development of the Wateridge Development, consisting of part of the former CFB Rockcliffe, Ottawa, ON (Subject Property), including the RSC Property. The objective of this document is to provide the necessary lines of evidence required to demonstrate that the concentrations of select metals present in the subsurface within the RSC area are of natural origin and not to be considered an exceedance in the context of regulation 153/04 (Section 49.1).

1.0 BACKGROUND

1.1 Phase Two ESA Results

Elevated naturally occurring metals over the site condition standards were found in several locations evaluated as part of the Phase Two ESA. Barium, chromium, cobalt, and vanadium concentrations were identified over the MECP Table 1 Standards.

The Subject Property and surrounding Subject Area is typified by a layer of mixed fills over a thin deposit of native clay over glacial till. In many areas on the former CFB Rockliffe property, the native soils have been reworked and mixed with other imported granular fills during historical development resulting in a variable and mixed fill layer over glacial till or bedrock. Samples collected during the Phase Two ESA where elevated metals were found are typically found where the observed clay and silt content was a larger component of the soil.

Given that the concentration of barium, chromium, cobalt, and vanadium are known to occur locally across Ottawa Area at elevated levels as a result of natural deposition of marine clays of eastern Ontario it is the QPs opinion that these concentrations are of natural origin and thus not considered an exceedance in the context of Ontario Regulation 153/04. The following sections presents the multiple lines of evidence required to support this opinion.

2.0 PHASE ONE ESA – POTENTIAL FOR SOURCES OF BARIUM, CHROMIUM, COBALT AND VANADIUM

A Phase One ESA was completed for the Subject Property which identified the presence of fill as the one potentially contaminating activity (PCA) on the RSC Property. No PCAs associated with the generation of metals were identified in the Phase One ESA. There were no areas of metal fabrication, steel manufacturing, electroplating, electronics manufacturing, metal working, scrap yards, slag or other mining residues identified on the Site that may have contributed to metals impacts at the Site, specifically barium, chromium cobalt, and vanadium.

3.0 CHAMPLAIN SEA CLAY

The silty clay soils that underlie eastern Ontario and western Quebec, including the Ottawa area, were deposited about 10,000 years ago in a marine (salt water) environment within what is known as the Champlain Sea, after the retreat of the last glacier advance. Because of the marine environment, Champlain Sea clay has a particular mineralogical composition, structure and physical properties and physio-chemical characteristics, which are very different than (for example) the glacial silty clay till that was deposited in a fresh-water environment and underlies much of southern and southwestern Ontario. After the Champlain Sea receded and the land re-emerged, the upper portion of the clay deposit was leached by fresh water that reduced its salinity (salt content), which altered the properties of this portion of the deposit. Over geologic time, in most areas where the silty clay soil forms the upper part of the soil profile and the water table has been at some depth below ground surface, the upper two to four metres has been weathered to form a stiff brown crust, which again altered the clay's physical and mineralogical characteristics. Below this weathered zone, the clay is grey in colour and it has essentially not been altered by the weathering process. It is also the marine depositional environment and subsequent processes that the silty clay soil has experienced that defines the types and concentrations of metals that are naturally occurring in these soils.

Clay is typically formed by the weathering of rocks and soil, specifically in the case of the Champlain Sea deposits, the physical abrasion of Precambrian bedrock by the glaciation process. The weathering process involves physical disaggregation and chemical decomposition that change original minerals to clay minerals (USGS, http://pubs.usgs.gov/info/clays/). Given this, comparing typical metal concentrations in bedrock to the Ottawa Regional Data (and Site data) can provide additional context on the source of barium, chromium, cobalt and vanadium. In Canada (as well as outside of Canada), standard mining industry practice is to evaluate metal enrichment of mine waste rock and overburden by comparing results to typical elemental abundances in continental crust (Turekian and Wedepohl (1961)). Using a similar approach, the observed metal concentrations in Ottawa Region clay are compared to typical elemental abundances in continental crust, and those in marine clay in Table 1 below.

Table 1: Comparison of Barium, Chromium and Vanadium Concentrations in Clay to Crustal Abundance:

Data	Average Barium Concentration (µg/g)	Average Chromium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
Typical Crustal Abundance of Continental Crust/Marine Clay	425/2300	22/90	25/74	120/120

As shown in Table 1, the typical continental crustal and marine clays indicate an abundance of these metals within values for chromium and vanadium in marine clays being very similar to what was observed on the Subject Property with the barium and cobalt on the Site being closer to the typical crustal abundance. It is noted that the ratios of the metals to also be similar to what was found on the Subject Property and are likely a product of natural deposition.

4.0 SUPPORTING STUDIES

The following section presents the findings of supporting studies completed on the Site and within the Ottawa Region of similar soils.

In addition to these studies, a previous Phase Two ESA and RSC application for neighbouring section the CFB Rockliffe property (Phase3/5) was obtained that relied on the O.Reg 49.1 exception (RSC#229794 filed on October 13, 2021). This RSC was filed by WSP (Golder) using the rationale as outlined in this memo.

4.1 Evaluation of Background Concentrations of Selected Metals in Soil, Wateridge Development, Former CFB Rockcliffe, Ottawa, Ontario. DST, March 2019

As part of the previous Phase Two ESA and RSC applications for the CFB Rockliffe property (including RSCs # 223850 and 224146, that relied on the O.Reg 49.1 exception), including the Subject Site, DST Consulting Engineers Inc. completed a study of natural background metals specific to the Subject Property, including the RSC Property. This study included a literature review of regional studies as well as site-specific background soil quality testing of the clays on the Subject Property. The on-Site evaluation included the collection and analysis of 40 site specific background soil samples of the clays on the Subject Property followed by the calculation of the 90th percentile concentration of barium, cobalt and vanadium. DST then used the site-specific testing and literature review to develop a site-specific background concentration for barium, cobalt and vanadium, which is presented in Table 2 below.

Table 2: DST Site Specific Metals Concentrations

Data	Average Barium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
DST Local Background Concentrations	437	29	130

As part of the study DST evaluated the historical activities in the areas of the identified elevated metals and concluded that none of the activities in the vicinity of the elevated metals could be attributed to the concentration of barium, cobalt, or vanadium.

4.2 Elevated Background Metals Concentrations in Fine-Grained Champlain Sea Deposits Eastern Ontario – Ottawa Region. Geofirma and Dillon, Feb. 2018

Geofirma and Dillon were retained by the City of Ottawa to undertake a review of available datasets of clay soils across the Ottawa Region and Eastern Ontario. The study included a statistical analysis of 364 individual data points collected from the regional Champlain Sea Deposits. The results of the assessment are presented in Table 3 below.

Table 3: Geofirma and Dillon Dataset

Data	Average Barium Concentration (µg/g)	Average Chromium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
Geofirma and Dillon Dataset Average (98th percentile)	460	145	27.9	123

4.3 WSP Dataset

WSP completed a review of fourteen project sites across the City where similarly identified natural metals in clay where identified, these sites include rural sites with no historical industry, commercial retail sites on previously vacant land as well as project sites local to the Subject Property and consists of approximately 100 individual samples taken from native clay. The average barium, chromium, cobalt and vanadium results are presented below.

Table 4: Ottawa Area Datasets

Data	Average Barium Concentration (µg/g)	Average Chromium Concentration (µg/g)	Average Cobalt Concentration (µg/g)	Average Vanadium Concentration (µg/g)
WSP Ottawa Regional Dataset	371	111	23	106

WSP has included a figure showing the location and average concentrations of these metals for each site data set. The figure demonstrates the geographical extent and separation of the data sets.

5.0 RATIOS BETWEEN METALS

As presented in the graphic below, the ratios between each of the metals from the 14 WSP sites show a consistent ratio between the concentration of barium, chromium, cobalt and vanadium. For example, in all data sets, an increase in vanadium over the MECP Table 1 background always resulted in a proportional increase in the other three metals.

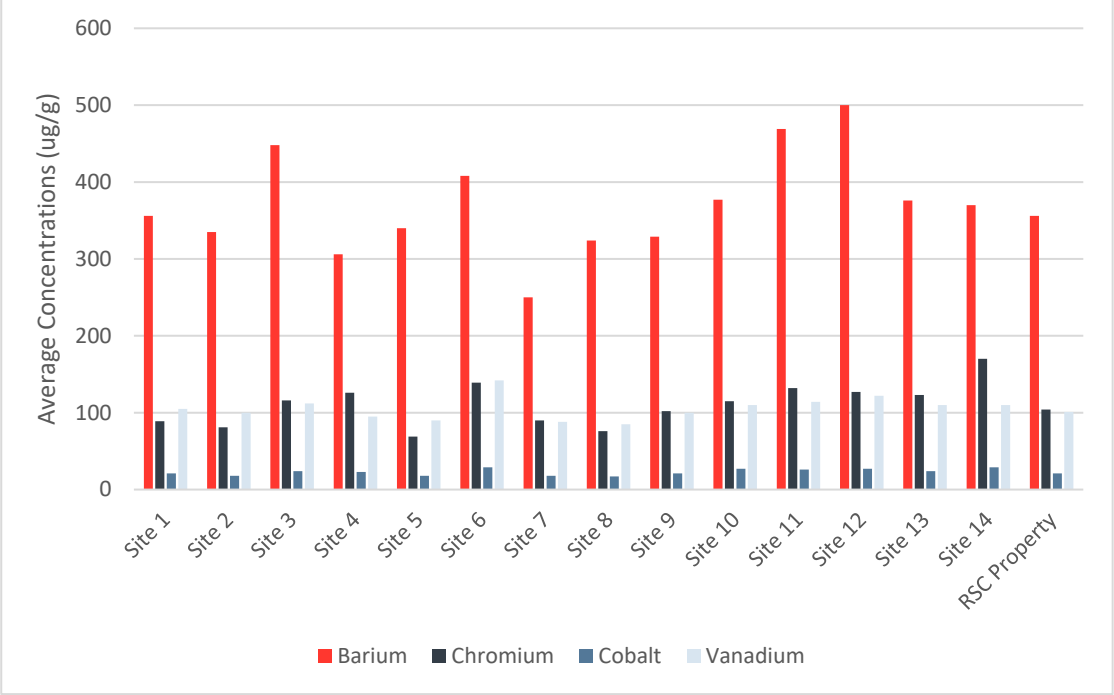


Figure 1: Average Concentrations of Select Metals in Local (Ottawa) Area Marine Clay

It would be expected that an anthropogenic source of metals would be unlikely to fall within a similar ratio due to the expected prevalence of one of the contaminants, which is not the case for the Subject Property which compares very closely to the regional average.

6.0 CONCLUSION

Based on the review of the Subject Property concentrations of barium, chromium, cobalt, and vanadium in comparison to the literature review discussed above, including a site-specific background study, it is concluded that the metals concentrations on the Subject Property are present at similar concentrations to those found in the natural background conditions local to the Ottawa Area. This is more noticeable for the sample mainly consisting of silt and clay. Where silty clay has been mixed (diluted with sandy soils) the metals are lower in concentration but found at similar ratios to those found in the background metal (i.e. corresponding increases in chromium, cobalt, and vanadium where the barium was found above background).

When combined with the Phase One ESA findings which did not identify a source for these specific compounds, it is considered that the application of the Section 49.1 of Ontario Regulation 153/04 for naturally occurring compounds is considered appropriate in this instance and are therefore not an exceedance of the site condition standards.

7.0 CLOSURE

We trust that the above document provides sufficient lines of evidence to demonstrate that the concentration of barium, chromium, cobalt and vanadium found on the RSC Property is of natural origin and result of natural depositional process and are not considered an exceedance of the site condition standards.

WSP Canada Inc.

Keith Holmes, MSc, PGeo
Senior Principal Geoscientist – Contaminated Sites

Tony Lyon, PEng
Environmental Engineer

KPH/TL/sg
https://golderassociates.sharepoint.com/sites/110705/project files/6 deliverables/phase two esas/phase two esa - phase 4-1_rsc/appendix f - naturally occuring metals/19124906-tm-natural met - final.docx

Attachments: Figure 1 - Ottawa Area Natural Concentrations of Select Metals in Clay

8.0 REFERENCES

DST, May 2015. Phase One Environmental Site Assessment, Wateridge Development, Former CFB Rockcliffe, Ottawa, Ontario.

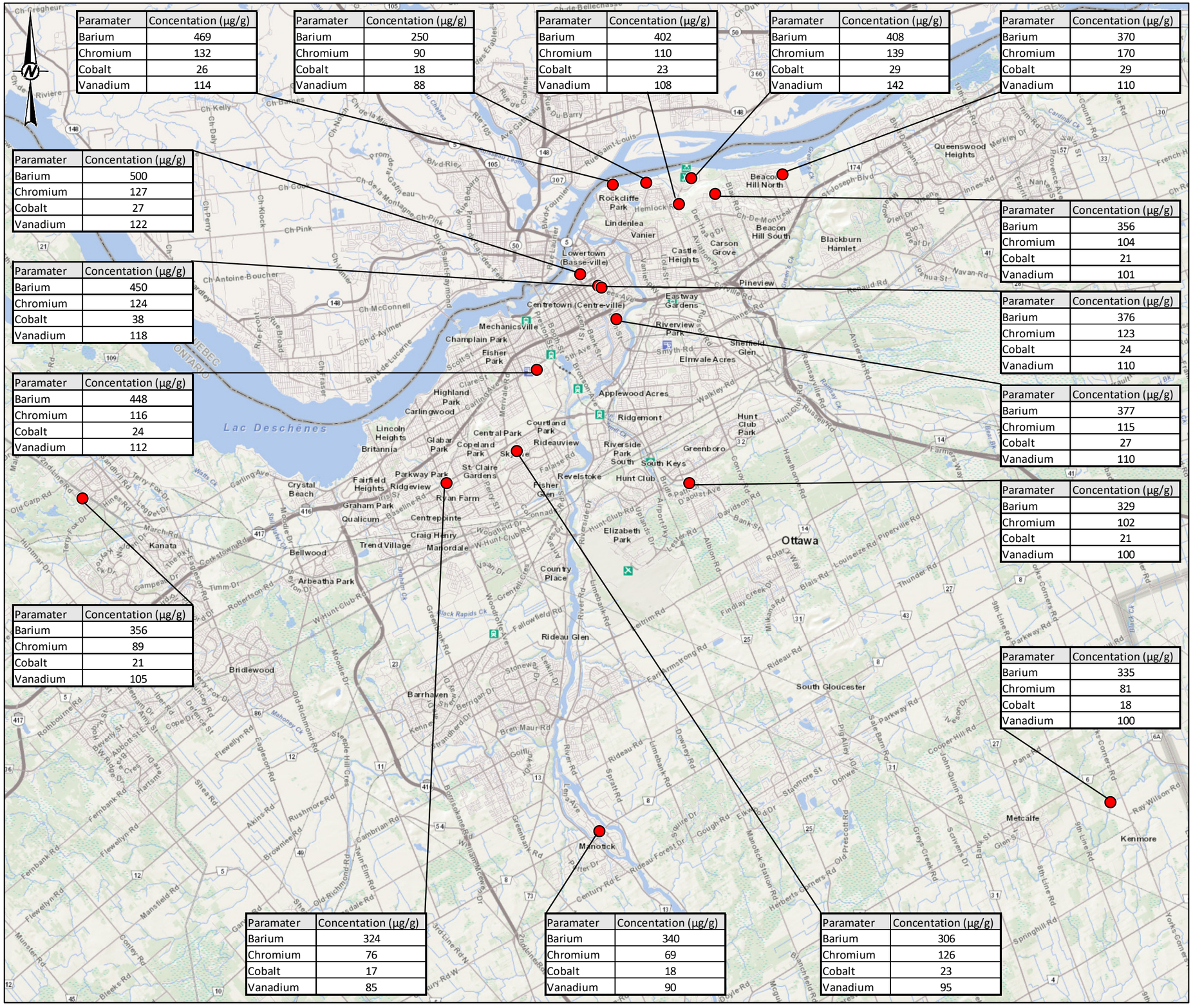
DST, May 2015. Phase Two Environmental Site Assessment, Wateridge Development, Former CFB Rockcliffe, Ottawa, Ontario.

Turekian and Wedepohl (1961). Distribution of the Elements in some major units of the Earth's crust. *Geological Society of America, Bulletin 72: 175-192).*

DST, March 2019. Evaluation of Background Concentrations of Selected Metals in Soil, Wateridge Development, Former CFB Rockcliffe, Ottawa, Ontario.

Geofirma and Dillon, Feb. 2018. Elevated Background Metals Concentrations in Fine-Grained Champlain Sea Deposits Eastern Ontario – Ottawa Region.

WSP Canada Inc. (formerly Golder Associates Ltd.) data set sourced from multiple Phase Two ESA and Excess soils projects for various private and public clients between 2015 and 2022.



Paramater	Concentation (µg/g)
Barium	469
Chromium	132
Cobalt	26
Vanadium	114

Paramater	Concentation (µg/g)
Barium	250
Chromium	90
Cobalt	18
Vanadium	88

Paramater	Concentation (µg/g)
Barium	402
Chromium	110
Cobalt	23
Vanadium	108

Paramater	Concentation (µg/g)
Barium	408
Chromium	139
Cobalt	29
Vanadium	142

Paramater	Concentation (µg/g)
Barium	370
Chromium	170
Cobalt	29
Vanadium	110

Paramater	Concentation (µg/g)
Barium	500
Chromium	127
Cobalt	27
Vanadium	122

Paramater	Concentation (µg/g)
Barium	356
Chromium	104
Cobalt	21
Vanadium	101

Paramater	Concentation (µg/g)
Barium	450
Chromium	124
Cobalt	38
Vanadium	118

Paramater	Concentation (µg/g)
Barium	376
Chromium	123
Cobalt	24
Vanadium	110

Paramater	Concentation (µg/g)
Barium	448
Chromium	116
Cobalt	24
Vanadium	112

Paramater	Concentation (µg/g)
Barium	377
Chromium	115
Cobalt	27
Vanadium	110

Paramater	Concentation (µg/g)
Barium	329
Chromium	102
Cobalt	21
Vanadium	100

Paramater	Concentation (µg/g)
Barium	356
Chromium	89
Cobalt	21
Vanadium	105

Paramater	Concentation (µg/g)
Barium	335
Chromium	81
Cobalt	18
Vanadium	100

Paramater	Concentation (µg/g)
Barium	324
Chromium	76
Cobalt	17
Vanadium	85

Paramater	Concentation (µg/g)
Barium	340
Chromium	69
Cobalt	18
Vanadium	90

Paramater	Concentation (µg/g)
Barium	306
Chromium	126
Cobalt	23
Vanadium	95

LEGEND

● APPROXIMATE SAMPLING LOCATION

0 1,500 3,000 6,000

1:150,000 METRES

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE

REFERENCE(S)

1. CONTAINS INFORMATION LICENSED UNDER THE OPEN GOVERNMENT LICENCE - ONTARIO
2. COORDINATE SYSTEM: NAD 1983 UTM ZONE 18N, PROJECTION: TRANSVERSE MERCATOR, DATUM: NORTH AMERICAN 1983

CLIENT
CANADA LANDS COMPANY

PROJECT
NATURALLY OCCURRING METALS MEMO
1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
OTTAWA AREA NATURAL CONCENTRATIONS OF SELECT METALS IN CLAY

CONSULTANT

WSP GOLDER

YYYY-MM-DD	2023-01-11
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0016	0	1

PATH: S:\Clients\Canada_Lands_Company\Wateridge_Village\99_PROJ\19124906_CLC_Enviro\0016_Metals_in_Clay\19124906-0016-HS-0001.mxd PRINTED ON: 2023-01-11 AT: 11:39:09 AM

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APPENDIX G

Remediation Report

APPENDIX G

Remediation Report

Wateridge Village Phase 4, Part of 1076 Hemlock Private, Ottawa, Ontario

Submitted to:

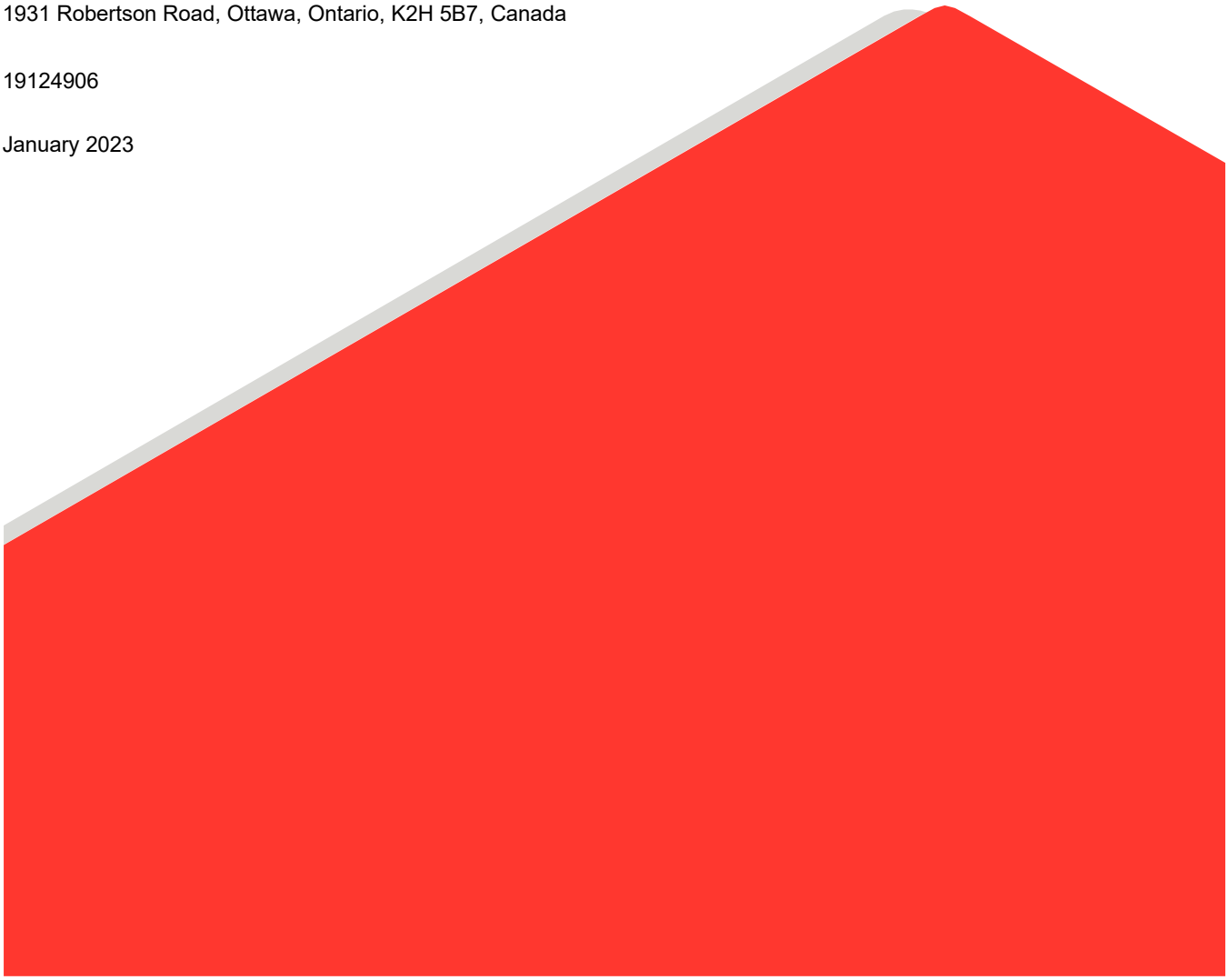
Canada Lands Canada
1050-100 Queen Street
Ottawa, Ontario
K1P 1J9

Submitted by:

WSP Canada Inc.
1931 Robertson Road, Ottawa, Ontario, K2H 5B7, Canada

19124906

January 2023



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TABLES

FIGURES

REMEDIATION REPORT

This report describes the methods and results of the remediation of a parcel of land located on the central portion of the property located at the former Canadian Forces Base (CFB) Rockcliffe in Ottawa, Ontario (hereafter referred to as the "Site" or "RSC Property").

The Site has been considered as a single parcel of land in this remediation report and is part of 1076 Hemlock Private. The Site has been identified as "RSC Property" as shown in Figure G1. This remediation report should be read in conjunction with the Phase Two ESA report (*Phase Two Environmental Site Assessment, Wateridge Village, Phase 4, Part of 1076 Hemlock Private, Ottawa, Ontario*).

Three areas of the RSC Property were remediated between September 2014 and January 2015 by another consultant for impacts identified, discussed under Section 1.0. In 2022, another remediation was completed to remove impacts associated with poor quality fill, discussed under Section 2.0.

1.0 HISTORICAL REMEDIATION

Based on findings of a historical Phase Two ESA, three areas of the RSC Property were identified as having exceedances of the Site Condition Standards and were remediated. These remediated areas were associated with the following APECs:

- Petroleum hydrocarbon related soil and groundwater impacts (as indicated by blue polygon in Figure G1), associated with two former fuel storage tanks (one below and one above ground tank), at the former swimming pool at Building 137. This building and storage tanks (demolished in 1997) were located off-Site, north of the central portion of the RSC Property. Remediation to address the identified soil and groundwater impacts took place off-Site with only a small portion of the remedial excavation encroaching on to the RSC Property (discussed in Section 1.1).
- Identified metals impacts in fill on the northwest portion of the RSC Property (test pit TP31 as shown in Figure G1). The initial test pit with the exceedance TP31 was located off-Site, but the remediation extended onto the Site.
- Petroleum hydrocarbon related soil impacts in two areas (BLD126-1 and BLD-126-2 as shown in Figure G1) in the vicinity of the former Building 126. BLD126-1 was located at the southeast portion of the former building footprint, while BLD126-2 was located southwest of the former building footprint.

During the remediation work associated with above APECs, excavated soil was screened and separated into impacted soil exhibiting staining and/or distinct petroleum odors, which was immediately loaded and transported to licensed waste disposal facilities (BFI Canada and Lafleche Environmental Inc.) and non-impacted soil which was stockpiled on Site for subsequent evaluation. Stockpile samples were collected from each stockpile following the required testing density, as defined under Ontario Regulation 153/04 for laboratory analysis of respective contaminants of concern (COCs) to determine the suitability of stockpiled soil for use as backfill material.

Interim and confirmatory wall and floor samples were collected from each excavation to confirm if the impacted material was removed. Excavation walls were sampled using grids of approximately 3 m^2, while excavation floors were sampled using grids of approximately 9 m^2. Samples from each excavation were submitted for laboratory analysis of COCs and were selected based on field screening results. Based on laboratory analytical results, excavations were extended laterally and/or vertically as necessary in the areas of reported until final confirmatory

sampling indicated that no contaminated soil remained within the limits of the excavations and clean remedial excavation boundaries were established.

For each excavation, the final number of confirmatory soil samples, from the remedial limit and stockpiles, submitted for laboratory analyses was equal to or greater than the minimum requirements set out in Table 3 of Schedule E, O.Reg. 153/04 (as amended). Soil samples were collected in accordance with the Ontario Ministry of Environment, Conservation and Parks (MECP) sampling guidelines: "Guidance on Sampling and Analytical Methods for Use at Contaminated Sites in Ontario", December 1996 (as amended) as well as Ontario Regulation 153/04 Records of Site Condition (as amended).

1.1 Remediation at Building 137

The contaminants of concern associated with Building 137, identified during previous subsurface investigations discussed in the Phase Two ESA report, included polycyclic aromatic hydrocarbons (PAHs), petroleum hydrocarbons (PHC) fractions F1 – F4 and benzene, toluene, ethylbenzene and xylenes (BTEX). Soil excavated from 0 – 1.7 meters below ground surface (mbgs) was disposed off-Site at licensed waste disposal facilities (BFI Canada and Lafleche Environmental Inc.). Approximately 1,648 m^3 of soil were removed

Following the remediation of the soil impacts, confirmatory samples were collected from the north wall, east wall and west wall to assess the presence and depth of contamination in the excavation walls and floor. A large portion of the south wall and floor of the excavation was exposed bedrock, and as such only limited confirmatory samples were collected in these areas (from the sections that were not bedrock). The locations of exposed bedrock were inspected for staining and olfactory evidence of PHC contamination and excavated where contamination was identified. Clean remedial excavation boundaries were established for each wall and floor of the excavation.

Guidance for soil sampling frequency in remedial excavations is provided in Ontario Regulation 153/04, as amended, Schedule E, Table 3 (Minimum Confirmation Sampling Requirements for Excavation); however, the largest excavation size on the table is listed as 750 to 1,000 m^2. As such, this table was extrapolated and used as guide for the remedial sampling frequency. For a 1,000 m^2 excavation, the regulation requires 5 floor and 8 sidewall samples, which equates to one floor sample every 200 m^2 (i.e., 1,000 divided by 5) of floor area, or one sidewall sample every 125 m^2 of floor space (i.e., 1,000 divided by 8). Based on this guidance and final excavation floor area of 3,662 m^2, a total of 19 floor samples and 30 sidewall samples are required to meet the soil sampling frequency provided in Ontario Regulation 153/04. In total, ninety-six (96) wall samples, two (2) floor samples and fifty (50) stockpile samples were collected and screened. Sixty-two (62) of the collected and screened confirmatory samples including thirty-five (35) sidewall samples, two (2) floor samples, and twenty-five (25) stockpile samples were submitted to the laboratory for analysis of COCs. Given impacted soil was excavated to bedrock, only limited floor samples could be collected for laboratory analysis. As such, the soil sampling frequency meets the requirements of the O.Reg 153/04. Of these, three wall validation samples (BLD137 WW SS1, BLD137 WW SS19 and BLD137 WW SS30) and a field duplicate were located within the RSC Property; however, location of sample BLD137 WW SS1 was not provided in the source report, but it is assumed to be on-Site as the western wall (WW) is located on-Site. Figures 4A to 4C show the sample locations for BLD137 WW SS19 and BLD137 WW SS30 with respect to the RSC Property boundary.

Following completion of the remedial excavation and based on results of validation sampling, it was confirmed that all impacted soil above MECP table 3 Standards* has been removed and impacted soil above MECP Table 1 Standards was removed from the RSC property. The total mass of excavated soil disposed was 32,958 metric tonnes.

* After the historic remediations were completed, an area of natural and scientific interest was identified within 30 m of the Site due to endangered bat habitat and butternut trees to the north and east of the Site. As such the RSC Property is considered an environmentally sensitive area and MECP Table 1 now applies.

Groundwater infiltrating into the remedial excavation for Building 137 had evidence of petroleum hydrocarbon sheen and odors. This was treated using a mobile water treatment system supplied by Clean Water Works (MOECC Registration 3664-6GGPRM). The pumped/treated groundwater was sampled for compliance as per the requirements of the sanitary sewer agreement between the City of Ottawa and the contractor. To evaluate the groundwater quality in the vicinity of Building 137, three monitoring wells (BHMW 137-1 to BHMW 137-3) were installed using a CME 850 drill rig to depths ranging between 3.47 and 4.38 mbgs. Following development of these wells (located outside the RSC Property boundary), three groundwater samples and a field duplicate were collected from these wells and analyzed for PHCs F1 to F4, BTEX and PAHs. Analytical results indicated that the sample from BHMW 137-2 exceeded applicable site condition standards for benzo(a)pyrene and PHC F2.

The residual groundwater exceedances at BHMW 137-2 were delineated off-Site using subsequent wells installed in 2022 on the RSC Property adjacent to the off-Site residual impacts (2022 monitoring wells 22-02, 22-04, 22-05 and 22-06, as shown in Figure 3A to 3C and discussed in the Phase Two CSM).

1.2 Remediation at Building 126

1.2.1 Remediation BLD 126-1

Based on identified impacts, the COCs at BLD 126-1 included PHC F1 – F4 and BTEX. Remedial activities were completed on September 16, 2014, and clean remedial excavation boundaries were established, as described earlier. In total, twenty-one (21) wall samples and twenty-three (23) floor samples were collected and screened. Of the samples collected and screened, nine (9) confirmatory samples, including five (5) wall samples and four (4) floor samples, were submitted to the laboratory for analysis. As per soil sampling frequency in remedial excavations provided in Ontario Regulation 153/04, a floor area of 235 m^2 requires a minimum of 3 floor and 5 sidewall samples to be analyzed, hence, the minimum sampling requirement mentioned in the O.Reg 153/04 was met.

Based on the results of the confirmatory samples, it was confirmed that all impacted soil has been removed from the RSC Property with 470 metric tonnes of impacted soil disposed at a licensed waste facility. The excavation was backfilled using 235 m^3 crushed stone (Granular B) from Lafarge Bearbrook quarry between October 14 and 16, 2014.

1.2.2 Remediation BLD 126-2

Based on the identified impacts, the COCs at BLD 126-2 included PHC F1 – F4, BTEX, and PAHs. Remedial activities were completed on September 16 and September 24, 2014 and clean remedial excavation boundaries were established. In total, twenty-one (21) walls samples and twenty (22) floor samples were collected and screened. Of the samples collected and screened, nine (9) confirmatory samples, including five (5) wall samples and four (4) floor samples, were submitted to the laboratory for analysis. Given that surface area of 220 m^2

requires a minimum of 3 floor and 5 sidewall samples to be analyzed, the minimum sampling requirement mentioned in the O.Reg. 153/04 was fulfilled for BLD 126-2.

Based on the results of the confirmatory samples, it was confirmed that all impacted soil has been removed from the RSC Property with 440 metric tonnes of impacted soil disposed at a licensed waste facility. The excavation was backfilled using crushed stone (Granular B) obtained from Lafarge Bearbrook quarry.

1.2.3 Groundwater Quality at Building 126

To evaluate groundwater quality in the vicinity of excavations BLD 126-1 and BLD 126-2, a monitoring well (BHMW 126-1) was installed on March 3, 2015, using a CME 850 drill rig to a depth of 5.43 mbgs. Following development of BHMW 126-1 and an existing well (BHMW 14), groundwater samples were collected and analyzed for PHCs F1 to F4, BTEX and PAHs. Analytical results indicated that each parameter concentration was below respective laboratory detection limits. No visual or olfactory evidence of petroleum impacts were observed during purging or sampling. As such no groundwater remediation was required or completed.

1.3 Remediation at TP31 (north of Building 71)

The metal impacts identified at TP31 were located adjacent north of the RSC Property (off-Site); however, the remedial excavation completed on September 16, 2014, encroached on to the RSC Property. In total, twenty-one (21) wall samples and twenty-three (23) floor samples were collected and screened. Of the samples collected and screened, eight (8) confirmatory samples, including five (5) wall samples and three (3) floor samples, were submitted for laboratory analysis. Given that surface area of 159 m^2 requires a minimum of 3 floor and 5 sidewall samples to be analyzed, the minimum sampling requirement mentioned in the O.Reg. 153/04 was fulfilled for this excavation.

Based on the results of the confirmatory samples, clean remedial excavation boundaries were established and 440 metric tons of impacted soil was disposed at a licensed waste facility. The excavation was backfilled between October 14 and 17, 2014.

To evaluate groundwater quality in the vicinity of this excavation, a monitoring well (BHMW 31-1) was installed on February 11, 2015, using a high torque track-mounted CME 850 drill rig to a depth of 4.87 mbgs. Following development of the newly installed monitoring well, a sample was collected and analyzed for metals. Analytical results indicated that each parameter concentrations were below the applicable site conditions standards. No visual or olfactory evidence of petroleum impacts were observed during purging or sampling. As such no groundwater remediation was required or completed.

2.0 2022 REMEDIAL ACTIONS

The remedial actions described below occurred between October 19 and December 15, 2022. The objective of the remedial excavation was to remove impacted soil located on the RSC Property, as identified during the subsurface investigation completed in July 2022. The impacts were inferred to have been introduced during the backfilling of the sewer trench, running north-south along the western portion of the Site.

The quantities of soil removed as part of this remediation and the verification samples that were collected are presented hereafter in this report. Groundwater was identified as meeting the applicable site condition standards in the Phase Two ESA and was therefore not part of the remedial actions.

2.1 Description of Soil Excavation Activities

2.1.1 Rationale and Methodology for Soil Removal and Treatment

The Site was remediated by excavating and removing the impacted fill identified in the Phase Two ESA (test pit and drilling program) and disposing it off-Site. Contaminants of Concern (COCs) identified in the fill were petroleum hydrocarbons (PHCs), BTEX, polycyclic aromatic hydrocarbons (PAHs) and metals. A total of eight samples (including a field duplicate) from the test pits and five boreholes exceeded applicable MECP Table 1 standards for PHCs or PAHs. Three samples exceeding PHC guidelines were located between 1.7 and 3.6 mbgs, whereas another five samples exceeding concentrations for various PAHs were between 0.1 and 3.8 mbgs. The estimate limits of the impacts were based on the delineation completed as part of the Phase II ESA. All these exceedances were excavated, removed and validated by clean samples as part of the remedial work.

Excavated overburden was hauled to the Waste Management West Carleton Environmental Centre landfill for disposal. No separation of soil or reuse of soil on the Site was carried out. No on-site treatment of excavated soil took place as part of this remediation work.

The bulk of the 2022 remediation occurred on-Site, however, the eastern most section of the remediation extended off-Site.

2.1.2 Soil Treatment

No treatment of the soil was completed.

2.1.3 Location of Remedial Action

The impacted overburden was excavated and removed from the Site as indicated on Figure G1. Samples from the floor and sidewalls of the excavation were collected to confirm compliance with applicable site condition standards. The RSC Property is defined on the Survey Plan provided in Appendix E of the Phase Two ESA report and the location of this remedial excavation is shown on Figures 4A through 4C and cross sections figures 5A to 5C, 6A to 6C, and G2A through G5B.

2.2 Quantities of Soil Removed from the Property

9,261.44 metric tonnes (approximately 4630.72 cubic metres) of impacted soil were removed from the Site. The excavation floor area was approximately 900 m^2 and was excavated to a depth ranging from 2 mbgs (in the western area where bedrock was encountered) to 5 mbgs in the southeast corner of the excavation. Sidewalls were sloped at 1:1 ratio at a minimum.

2.3 Groundwater Removal and Treatment

As discussed in the Phase Two ESA, no groundwater contamination was present at the Site and therefore there was no remediation or treatment of groundwater.

2.3.1 Rationale and Methodology for Groundwater Removal and Treatment

No groundwater removal was required associated with this remedial excavation.

2.3.2 Groundwater Treatment

No treatment of groundwater was required or completed.

2.3.3 Location of Remedial Action

No remedial actions for groundwater were completed.

2.3.4 Quantities of Groundwater Removed from the Property

Not applicable, given no groundwater was removed from the Site.

2.4 Sediment Removal and Treatment

2.4.1 Rationale and Methodology for Sediment Removal and Treatment

No sediment existed on the Site, and as such no treatment or remediation of sediment was required.

2.4.2 Sediment Treatment

No treatment of sediment was completed.

2.4.3 Location of Remedial Action

No remedial actions for sediment were completed.

2.4.4 Quantities of Sediment Removed from the Property

No sediment was removed from the property.

2.5 Permits

No permits were issued for this remediation work.

Contaminated soil from the Site was hauled and disposed by R.W. Tomlinson Limited (Tomlinson) at the Waste Management West Carleton Environmental Centre landfill, which operates under a Certificate of Approval with the Ontario Ministry of the Environment.

2.6 Contaminants Introduced to the Property

No significant spills, leaks or releases were noted during the remediation process. No other contaminants were introduced to the Site.

To mitigate the accidental introduction of contaminants to the Site during the remediation process, the following control measures were implemented:

- Best practices were used for storage or handling of fuels and oils;
- Refueling procedures for machinery involved fuelling in non-remediated areas to more easily allow for cleanup of any potential spills;
- Validation of remediation completed in sections that did not require further vehicle traffic; and,
- Visual inspection of areas of the Site for any potential signs of contamination.

2.7 Baseline Conditions and Monitoring for Increases in Contaminants

The analytical baseline condition for the Site used to monitor any increase in contaminants was the Phase Two ESA groundwater sampling results. Given no exceedances above the applicable site condition standards were identified in the groundwater samples for any parameters analyzed, no additional groundwater sampling was conducted at the end of the soil remediation. In addition, no groundwater was encountered and no seepage into the excavation was observed during this remediation work.

Furthermore, a WSP Canada Inc. (WSP, formerly Golder Associates Ltd.) technician was on Site full time during the remediation and monitored and documented any unexpected conditions throughout the remediation.

2.8 Groundwater Monitoring Well Selection

The monitoring wells installed on the RSC Property were completed for the Phase Two ESA. As described in the Phase Two ESA, the groundwater at the RSC Property did not exceed the applicable criteria and as such no remediation of the groundwater was required. The rationale for the monitoring locations is described in the Phase Two ESA report.

3.0 FREE FLOWING PRODUCT

3.1 Observations during Remediation

No free product was noted during the remediation process within the RSC Property.

3.2 Volume of Product Present and Removed

No flowing product was observed or removed during the remediation process.

3.3 Product Recovery and Remediation

No flowing product was recovered from the Site during the remediation process.

4.0 RESULTS OF CONFIRMATORY SAMPLING AND ANALYSIS

Upon completion of the remedial excavation, all soil on the RSC Property met the applicable Ontario Ministry of the Environment, Conservations and Parks (MECP) Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act Table 1: Generic Site Condition Standards for Residential Property Use, coarse-textured soil, dated April 15, 2011 (MECP Table 1 Standards). A limited number of confirmation samples had concentrations of one or more of barium, chromium (total), cobalt, or vanadium above the MECP Table 1 Standards, which were interpreted to be natural background metals.

Refer to Appendix F of the Phase Two ESA report provided in the attachments for further details.

4.1 Description of Confirmatory Sampling

4.1.1 Description of Confirmatory Sampling for Historical Remediation

Confirmatory soil samples (including duplicates) were collected during the various remedial excavations in 2014(discussed in Section 1) at the RSC Property. Of these, eleven (11) confirmatory soil samples were collected from final grade of the excavation for vertical delineation and eighteen (18) confirmatory soil samples were collected from different sidewalls to confirm lateral delineation on the impacts. Please refer to Section 1.0 for details.

4.1.2 Description of Confirmatory Sampling for 2022 Remediation

A total of fourteen (14) confirmatory soil samples were collected during the 2022 remediation that met MECP Table 1 Standards; ten (10) wall samples and four (4) floor samples. Due to the eastern wall being excavated past the RSC Property boundary, six (6) of these samples were located off-Site.

In addition the to fourteen (14) confirmation samples that met MECP Table 1 Standards, eleven (11) addition samples were collected that exceeded MECP Table 1 which were further excavated. In the southeast corner of the excavation, three iterations of a sample being collected which exceeded MECP Table 1 criteria (one sample exceed followed by further excavation and resampling). Ultimately in this area further excavation was completed until bedrock was encountered.

Soil samples were collected by hand directly from the excavation at all locations using a cleaned stainless steel hand trowel. Disposable nitrile gloves were worn by WSP personnel during soil sampling and gloves were changed between samples. Soil samples were placed in glass jars and vials supplied by the analytical laboratory for chemical analysis of PHC F1 to F4, BTEX, PAHs and metals. Soil samples were kept on ice and were delivered to the analytical laboratory, Bureau Veritas Laboratories (BV).

Details regarding the collection and screening of soil samples have been discussed under respective remedial tasks (sections 1 and 2). Details of soil samples submitted for laboratory analysis, including quality assurance/quality control (QA/QC) samples, are provided in the Phase Two ESA laboratory report tables.

Given no groundwater was encountered during the remedial excavations at the RSC Property, no groundwater samples were collected or analyzed.

4.2 Rationale and Methodology for Confirmatory Sampling – 2022 Remediation

4.2.1 Contaminants of Concern (COCs)

Confirmatory sampling was conducted to ensure that all contaminated soil was removed from the Site. As documented in the Phase Two ESA, the COCs for the Site are PHCs, PAHs and metals for soil.

4.2.2 Sampling Frequency, Number of Verification Samples

The verification sampling program included the collection of samples as per the guidance for sampling and analysis frequency is provided in O. Reg 153/04, as amended, Schedule E, Table 3 (Minimum Confirmation Sampling Requirements for Excavation). A visual screening for debris (such as asphalt, concrete, glass, etc.) was conducted and the suspected worst case sample was collected. The 2022 remedial excavation for the sewer trench had a floor area of 900 m^2, and hence required 5 confirmation floor samples and 8 confirmation sidewall samples, however, the westernmost third of the excavation was terminated on bedrock, so the area of the excavation not terminated on bedrock was 600 m^2, which would require four (4) floor samples. A total of ten (10) sidewall and four (4) floor confirmatory samples analyzed met the applicable site conditions standards.

Therefore, the sample frequency meets the minimum soil sampling frequency target for the remediation.

4.2.3 Sampling Locations and Depths

Sampling locations are shown on the site plan and cross sections contained in Figures G2A to G5B of this remediation report. Generally, the samples are described as follows:

Floor Samples: Four (4) floor samples were collected which meet applicable site conditions standards. Each confirmatory samples were collected from the base of the remedial excavation when bedrock was not encountered, and the maximum sample depth was 4.2 mbgs.

Wall Samples: Ten (10) wall samples were collected which meet applicable site conditions standards. Sidewall sample depths ranged between 1.0 and 2.5 mbgs.

Given no exceedances were identified in the groundwater samples analyzed as part of the Phase Two ESA, no sampling for validation of groundwater quality following the remedial excavation was completed.

Copies of the Laboratory Certificates of Analysis are provided in Appendix B of the Phase Two ESA report and analytical results are summarized in Table G1.

4.3 Excavation Dimensions and Number of Confirmatory Samples

The final extent of the remedial excavation was approximately 900 m^2 and was excavated to a depth ranging from 2 mbgs (in the western area where bedrock was encountered) to 5 mbgs in the southeast corner of the excavation.

As stated previously a total of fourteen (14) confirmatory samples were collected which meet applicable site conditions standards.

Cross sections from the Phase Two ESA were updated to reflect post-remediation conditions and show typical cross sections (Figures 5A through 6C) of the remedial excavation. Remediation specific cross-sections are provided in Figures G2A to G5B.

4.4 Quarterly Groundwater Sampling

As discussed in the Phase Two ESA, groundwater at the RSC Property was not found to have any exceedances of the applicable MECP Table 1 Standards at the time of sampling. Therefore, no quarterly sampling was completed or required as there have never been any documented exceedances of groundwater samples collected from the Site.

4.4.1 Groundwater Levels and Well Construction Details

Groundwater sampling was not required to validate the remediation as such there are no well construction details included in the remediation report. Details of the monitoring wells installed as part of the Phase Two ESA and associated groundwater levels are provided in the appendices of the Phase Two ESA report.

4.5 Quality Assurance and Quality Control Results

The data collected as part of the remediation field program was evaluated according to the following criteria to evaluate its validity: precision, accuracy, completeness, representativeness and comparability. A discussion of each criterion as it relates to the QA/QC program is provided below.

4.5.1 Precision

Precision is a measurement of the repeatability of the methods employed, i.e., sampling methods. Precision is evaluated through the testing of blind field duplicate samples. As such, WSP implemented the following laboratory analytical quality control measures:

- Collection of 2 duplicate soil samples from samples and submission for analyses of PHC F1-F4, BTEX, PAHs and/or metals, detailed as follows:

Field duplicate ID	Original soil sample ID	Parameters analyzed
VS-WST-DUP-1	VS-WST-WW2	PHC F1-F4, BTEX, PAHs and metals
VS-EST-DUP1	VS-EST-SW1	

To determine the precision of the duplicate and original soil sample results, the relative percent difference (RPD) was calculated according to the following equation:

$$RPD = \frac{|x_2 - x_1|}{\left(\frac{x_1 + x_2}{2}\right)} \times 100$$

Where, x_1 and x_2 are the original and duplicate concentrations. RPDs are calculated only if the concentrations of a parameter are greater than the laboratory RDL in both the duplicate and original samples. In addition, lower precision in the RPD calculation is expected when the average of the concentrations of the analytes is less than 5 times the RDL. Therefore, RPDs were calculated for the original and duplicate sample only in cases where the average of the measured concentrations of analytes was five (5) times greater than the RDL.

The following RPD limits were considered reasonable and are based on the MECP Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act and the laboratory recommended ranges (these ranges are two times the laboratory criterion as per Canadian Council of Ministers of the Environment [CCME] recommendations):

- RPDs in soil: 60% for PHCs, 100% for BTEX, 80% for PAHs, and 60% for metals

Soil RPD

Each of the calculated RPD values was within the acceptable range with the exceptions shown in the table below.

Soil Sample and Duplicate	Parameters in Soil	ROD (%)
VS-EST-SW1 and VS-EST-DUP1	Acenaphthene	148.7
	Anthracene	130. 7
	Benz(a)anthracene	90.9
	Benzo(a)pyrene	84.0
	Benzo(k)fluoranthene	82.9
	Chrysene	90.9
	Fluoranthene	99.7
	Fluorene	149.3
	1 Methlynaphthalene	159.5
	2 Methlynaphthalene	170.9
	Naphthalene	179.8
	Phenanthrene	130.6
	Pyrene	100.0

The heterogeneous nature of the soil from the fill layer is likely the cause of the variability in the lab results between the original sample and the duplicate. Hence, the integrity of the analytical methods is considered acceptable. Furthermore, the higher concentration of the two results between the original and field duplicate samples was considered as a conservative approach.

4.5.2 Accuracy

Accuracy is a measure of how close a measured value is to the true value. The accuracy of the laboratory data is generally evaluated by the laboratory through the use of matrix spikes or surrogate recoveries.

A review of the laboratory spikes and recoveries show that all were within acceptable ranges.

In addition, the laboratory QA/QC program included lab duplicates, spiked blanks and method blanks. The analytical results for the laboratory quality assurance samples indicate that the results of the internal quality control program were within the laboratory's specified control limits with a few exceptions for which it was indicated that the overall quality meets acceptability criteria.

Based on the above, the laboratory data presented herein are considered to be accurate.

4.5.3 Completeness

Completeness is evaluated by comparing the planned sampling program with the sampling program that was actually completed and evaluating discrepancies. WSP completed all planned sampling and analytical work for this remedial program (i.e., met the minimal sampling verification frequency and parameter analysis list), so the information is considered to be complete.

4.5.4 Representativeness

Representativeness is the degree to which the samples collected during the remediation represent the soil conditions from which they were collected. As part of the remediation, WSP implemented the following measures to ensure that representative data was obtained:

- An appropriate and representative number of samples were analyzed;
- Use of dedicated or cleaned sampling equipment between samples;
- Use of appropriate laboratory supplied sampling jars and bottles;
- Analysis within an acceptable holding time as specified in the MECP document "*Protocol for Analytical Methods Used in the Assessment of Properties under Part XV.1 of the Environmental Protection Act",* March 9, 2004 (amended as of July 1, 2011);
- Delivery of samples under a Chain of Custody; and,
- Laboratory analysis by SCC accredited laboratory (BV Labs).

Based on the above, it is considered that the data collected at the Property during the remediation is representative of the Property environmental conditions at the time the work was completed.

4.5.5 Comparability

Comparability describes how well collected data can be compared to other sample results. Consistent field procedures and analytical methods can assure comparison of the data obtained. Field procedures and analytical methods followed by previous consultant and WSP were industry-approved standards to allow for comparison of data with the applicable MOECC standards.

Based on the above information, data collected as part of the remediation field program are considered to be comparable.

Accordingly, the analytical data generated during the investigation are valid and representative and may be used in this remediation report without further qualification.

5.0 SOIL BROUGHT TO THE PHASE TWO PROPERTY

To backfill the remedial excavation, soil and rock was taken from the adjacent off-Site property where remedial activities (excavation for groundwater treatment) were occurring concurrent to the remediation of the Site as well as a clean soil stockpile from the nearby development parcel (Phase 7) east of the RSC Property but within the same Wateridge Village development property.

Soil and rock originating from the adjacent remediation was sourced from clean soil and bedrock located above the groundwater water table which was separated and stockpiled on the adjacent property. Prior to the importation and use of these stockpiles were characterized as discussed below. In total 640.3 m^3 of soil and 1,598.50 m^3 of rock were used to backfill the remediation.

Approximately 2,300 m^3 of additional backfill was sourced from soil that had been stockpiled on the adjacent parcel (Phase 7) of the development originating from ongoing development activities (houses and infrastructure) elsewhere in the subdivision where Records of Site Condition were already in place.

Both stockpiles were sampled in accordance with the stockpile frequency under O.Reg 153/04 (as required under O.Reg 406/19 for ex-situ stockpile characterization) and analysed for metals, PAH, and PHC+BTEX. This included eight samples and one duplicate from the adjacent groundwater remediation and thirty nine samples plus 3 duplicates from the other stockpile on the development property. Each of the samples was found to meet the MECP Table 1 Standards. Analytical results of the backfill used on Site are shown on Table G2.

Both stockpiles were located on the Wateridge Village development property, with the address of 1076 Hemlock Private, Ottawa, Ontario.

6.0 CONCLUSIONS

The remediation of the Site included removal of all impacted soil from the RSC Property. This was completed by mechanical means using hydraulic excavators. Following the excavation, soil verification samples were collected and submitted to BV Labs for the Contaminants of Concern. Based on the verification samples, all of which met the MECP Table 1 Standards and the fact that the groundwater was found to meet the Site standards during the Phase Two ESA, it is concluded that all media on the RSC Property satisfied the MECP Table 1 Standards following remediation.

Signature Page

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SAC/LT/KPH/sg
https://golderassociates.sharepoint.com/sites/110705/project files/6 deliverables/phase two esas/phase two esa - phase 4-1_rsc/appendix g - remediation/app g rsc_rem parcel 4-final.docx

Tables

Sample Location			Western Sewer Trench								
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	VS-WST-NW-1	VS-WST-NW-2	VS-WST-SW-1	VS-WST-SW-2	VS-WST-WW-1	VS-WST-WW2	VS-WST-DUP-1 (Duplicate of VS-WST-WW2)	VS-WST-WW3	VS-WST-WW4
Date Sampled			10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	2022-11-01	2022-11-01	2022-11-01	2022-11-07
Sample Depth (mbgs)	mbgs		1.9-2.1	1.0-1.2	2.0-2.1	1.3-1.4	0.9-1.1	1.5	1.5	2.0	2.0
Parameter											
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	10	31	23	17	18	24	22	30	14
TPgH (Gas C5-C10)	µg/g	--	95	87	91	89	87	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--

Sample Location			Eastern Sewer Trench								
Sample ID	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	**VS-EST-NW1[2]**	**VS-EST-NW2**	**VS-EST-SW1**	**VS-EST-DUP1 (Duplicate of VS-EST-SW1)**	**VS-EST-SW2[2]**	**VS-EST-EW1[2]**	**VS-EST-EW2[2]**	**VS-EST-EW3[2]**	**VS-EST-EW4[2]**
Date Sampled			**2022-11-01**	**2022-11-07**	**2022-11-03**	**2022-11-03**	**2022-11-08**	**2022-11-01**	**2022-11-01**	**2022-11-03**	**2022-11-09**
Sample Depth (mbgs)	**mbgs**		**2.0**	**2.0**	**3.0**	**3.0**	**2.0**	**2.5**	**2.5**	**3.0**	**2.0**
Parameter											
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	0.02	<0.020	<0.02	<0.02	<0.02	<0.020
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	0.20	<0.020	<0.02	<0.02	<0.02	<0.020
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	0.05	<0.020	<0.05	<0.05	<0.05	<0.020
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.020	<0.02	<0.02	<0.02	<0.020
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.040	<0.04	<0.04	<0.04	<0.040
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.040	<0.04	<0.04	<0.04	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	83	100	<50	<50	<50	51	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--		--	--	--	--
F4 (C34 to C50)	µg/g	120	**130**	<50	71	86	78	<50	<50	**150**	120
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--		--	--	--	--
Moisture Content	%	--	25	22	19	21	22	17	21	12	16
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--

Sample Location			Sewer Trench Floor						
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	VS-ST-F1	VS-ST-F2	VS-EST-F1[2]	VS-EST-F2[2]	VS-EST-F3[2]	VS-EST-F4[2]	VS-EST-F5[2]
Date Sampled			2022-12-07	2022-12-08	2022-11-01	2022-11-01	2022-11-03	2022-11-08	2022-12-01
Sample Depth (mbgs)	mbgs		4-4.2	3.8-4.2	3.8-4.2	3.8-4.2	4.0	2.0	4.0-4.3
Parameter									
Benzene	µg/g	0.02	<0.020	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020
Toluene	µg/g	0.20	<0.020	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020
Ethylbenzene	µg/g	0.05	<0.020	<0.020	<0.05	<0.05	<0.05	<0.020	<0.020
o-Xylene	µg/g	--	<0.020	<0.020	<0.02	<0.02	<0.02	<0.020	<0.020
p+m-Xylene	µg/g	--	<0.040	<0.040	<0.04	<0.04	<0.04	<0.040	<0.040
Xylenes (Total)	µg/g	0.05	<0.040	<0.040	<0.04	<0.04	<0.04	<0.040	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	69	<50	110
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<50	61	<50	<50	**170**	59	**240**
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	No
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	810
Moisture Content	%	--	16	16	24	39	9.8	6.7	14
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--

Sample Location			BLD137									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD 137 NW SS3[2]	BLD 137 NW SS4[2]	BLD 137 NW SS13[2]	BLD 137 NW SS34[2]	BLD 137 NW SS53[2]	BLD 137 NW SS60[2]	BLD 137 NW SS79[3]	BLD 137 NW SS96[3]	BLD 137 SW SS46[2]	BLD 137 EW SS47[2]
Date Sampled			2014-09-10	2014-10-16	2014-10-16	2014-10-16	2014-11-12	2014-11-12	2014-12-12	2014-12-12	2014-11-10	2014-12-12
Sample Depth (mbgs)	mbgs		0.5	1	0.3	2.9	1.2	0.85	0-1.5	0-1.5	4.3	2.1
Parameter												
Benzene	µg/g	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	µg/g	0.20	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	µg/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	µg/g	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
p+m-Xylene	µg/g	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Xylenes (Total)	µg/g	0.05	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<10	<10	<50	<50	<10	<10	<10	<10	<10	<10
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	NA	NA	NA	NA	--	--	--	--	--	--
Moisture Content	%	--	--	--	--	--	--	--	--	--	--	--
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--

Sample Location			BLD137									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD 137 SW SS62[2]	BLD 137 EW SS64[2]	BLD 137 EW SS68[2]	BLD 137 EW SS76[2]	BLD 137 EW SS11[3]	BLD 137 EW SS31[2]	BLD 137 WW SS1[3]	BLD 137 WW DUP1 (Dup of WW SS1)[3]	BLD 137 WW SS19	BLD 137 WW SS30
Date Sampled			2014-11-10	2014-12-12	2014-12-12	2014-12-12	2014-11-04	2014-11-04	2014-11-10	2014-11-10	2014-11-10	2014-11-10
Sample Depth (mbgs)	mbgs		4	1.3	1	0.8	1	1.9	3.7	3.7	1.4	2
Parameter												
Benzene	µg/g	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	µg/g	0.20	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	µg/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	µg/g	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
p+m-Xylene	µg/g	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Xylenes (Total)	µg/g	0.05	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<10	<10	<10	<10	<10	<10	54	<10	<10	<10
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<10	<10	<10	86	<10	<10	13	<10	<10	<10
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	NA	--	--	--	--	--
Moisture Content	%	--	--	--	--	--	--	--	--	--	--	--
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--

Sample Location			BLD126									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD126-1 P1	BLD126-1 P2	BLD126-1 P3	BLD126-1 P4	BLD126-1 P5	BLD126-1 P6	BLD126-1 SS7	BLD126-1 SS19	BLD126-1 SS35	BLD126-1 DUP1 (dup of SS35)
Date Sampled			2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-24	2014-09-24	2014-09-24	2014-09-24
Sample Depth (mbgs)	mbgs		0.7	0.3	0.2	0.8	1	1	0.45	1	1	1
Parameter												
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<10	<10	<10	46	<10	140	<10	<10	<10	<10
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<10	<10	<10	25	<10	81	<10	<10	<10	<10
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	--	--	--	--	--	--	--	--	--	--
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--

Sample Location			BLD126									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD126-2 P1	BLD126-2 P2	BLD126-2 P3	BLD126-2 P4	BLD126-2 P5	BLD126-2 P6	BLD126-2 SS7	BLD126-2 SS17	BLD126-2 SS25	BLD126-2 SS30
Date Sampled			**2014-09-16**	**2014-09-16**	**2014-09-16**	**2014-09-16**	**2014-09-16**	**2014-09-16**	**2014-09-26**	**2014-09-26**	**2014-09-26**	**2014-09-26**
Sample Depth (mbgs)	**mbgs**		**1**	**1**	**0.5**	**0.45**	**0.3**	**0.5**	**0.25**	**1**	**1**	**1**
Parameter												
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
Toluene	µg/g	0.20	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
Ethylbenzene	µg/g	0.05	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
o-Xylene	µg/g	--	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.020
p+m-Xylene	µg/g	--	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.040
Xylenes (Total)	µg/g	0.05	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<10	<10	<10	<10	<10	<10	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	--	--	--	--	--	--	--	--	--	--
F4 (C34 to C50)	µg/g	120	<10	<10	<10	<10	<10	<10	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	--	--	--	--	--	--	--	--	--	--
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	Off-site sample location included for reference purposes only
(3)	Location of sample not provided in source report
(4)	No date was provided in the source report.

Sample Location			Western Sewer Trench								
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	VS-WST-NW-1	VS-WST-NW-2	VS-WST-SW-1	VS-WST-SW-2	VS-WST-WW-1	VS-WST-WW2	VS-WST-DUP-1 (Duplicate of VS-WST-WW2)	VS-WST-WW3	VS-WST-WW4
Date Sampled			10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	2022-11-01	2022-11-01	2022-11-01	2022-11-07
Sample Depth (mbgs)	mbgs		1.9-2.1	1.0-1.2	2.0-2.1	1.3-1.4	0.9-1.1	1.5	1.5	2.0	2.0
Parameter											
Acenaphthene	µg/g	0.072	<0.005	<0.005	<0.005	<0.005	0.054	ND	ND	ND	<0.0050
Acenaphthylene	µg/g	0.093	<0.005	<0.005	<0.005	0.013	0.0051	ND	0.0063	ND	<0.0050
Anthracene	µg/g	0.16	<0.005	<0.005	<0.005	0.01	0.13	ND	ND	ND	0.0056
Benz(a)anthracene	µg/g	0.36	<0.005	0.0087	<0.005	0.055	0.32	0.015	0.02	ND	0.025
Benzo(a)pyrene	µg/g	0.3	<0.005	0.008	<0.005	0.051	0.25	0.015	0.02	ND	0.024
Benzo(b)fluoranthene	µg/g	0.47	<0.005	0.011	<0.005	0.072	0.33	0.025	0.031	ND	0.037
Benzo(g,h,i)perylene	µg/g	0.68	<0.005	0.0053	<0.005	0.034	0.14	0.012	0.014	ND	0.017
Benzo(k)fluoranthene	µg/g	0.48	<0.005	<0.005	<0.005	0.027	0.13	0.0077	0.011	ND	0.012
Chrysene	µg/g	2.8	<0.005	0.0074	<0.005	0.048	0.24	0.015	0.017	ND	0.023
Dibenz(a,h)anthracene	µg/g	0.1	<0.005	<0.005	<0.005	0.0091	0.041	ND	ND	ND	<0.050
Fluoranthene	µg/g	0.56	<0.005	0.018	<0.005	0.099	**0.78**	0.035	0.04	ND	0.06
Fluorene	µg/g	0.12	<0.005	<0.005	<0.005	<0.005	0.06	ND	ND	ND	<0.30
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.005	0.0052	<0.005	0.034	0.15	0.012	0.015	ND	0.018
1 Methlynaphthalene	µg/g	0.59[2]	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	ND	<0.050
2 Methlynaphthalene	µg/g	0.59[2]	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	ND	<0.070
1 and 2 Methlynaphthalene (2)	µg/g	0.59	--	--	--	--	--	ND	ND	ND	<0.0071
Naphthalene	µg/g	0.09	<0.005	<0.005	<0.005	<0.005	<0.005	ND	ND	ND	<0.0050
Phenanthrene	µg/g	0.69	<0.005	0.0066	<0.005	0.031	0.57	0.017	0.018	ND	0.03
Pyrene	µg/g	1	<0.005	0.017	<0.005	0.084	0.55	0.027	0.032	ND	0.047

Sample Location			Eastern Sewer Trench								
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	VS-EST-NW1[3]	VS-EST-NW2	VS-EST-SW1	VS-EST-DUP1 (Duplicate of VS-EST-SW1)	VS-EST-SW2[3]	VS-EST-EW1[3]	VS-EST-EW2[3]	VS-EST-EW3[3]	VS-EST-EW4[3]
Date Sampled			2022-11-01	2022-11-07	2022-11-03	2022-11-03	2022-11-08	2022-11-01	2022-11-01	2022-11-03	2022-11-09
Sample Depth (mbgs)	mbgs		2.0	2.0	3.0	3.0	2.0	2.5	2.5	3.0	2.0
Parameter											
Acenaphthene	µg/g	0.072	ND	<0.0050	0.025	**0.17**	0.0056	ND	ND	ND	<0.050
Acenaphthylene	µg/g	0.093	0.0059	0.0089	0.015	0.029	<0.0050	ND	0.0053	ND	<0.050
Anthracene	µg/g	0.16	0.0067	<0.0050	0.13	**0.62**	0.016	ND	0.012	ND	<0.050
Benz(a)anthracene	µg/g	0.36	0.02	0.015	**0.6**	**1.6**	0.061	0.015	0.045	ND	<0.050
Benzo(a)pyrene	µg/g	0.3	0.017	0.021	**0.49**	**1.2**	0.057	0.012	0.038	ND	<0.050
Benzo(b)fluoranthene	µg/g	0.47	0.024	0.03	**0.65**	**1.5**	0.076	0.019	0.053	ND	<0.050
Benzo(g,h,i)perylene	µg/g	0.68	0.013	0.026	0.26	0.52	0.042	0.0086	0.025	ND	<0.050
Benzo(k)fluoranthene	µg/g	0.48	0.0079	0.01	0.24	**0.58**	0.028	0.0062	0.017	ND	<0.050
Chrysene	µg/g	2.8	0.014	0.013	0.45	1.2	0.05	0.011	0.035	ND	<0.050
Dibenz(a,h)anthracene	µg/g	0.1	ND	<0.050	0.074	**0.17**	0.0097	ND	0.0054	ND	<0.050
Fluoranthene	µg/g	0.56	0.041	0.032	**0.97**	**2.9**	0.13	0.03	0.089	ND	<0.050
Fluorene	µg/g	0.12	ND	<0.30	0.045	**0.31**	0.0063	ND	ND	ND	<0.050
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.011	0.02	**0.29**	**0.61**	0.036	0.008	0.025	ND	<0.050
1 Methlynaphthalene	µg/g	0.59[2]	ND	<0.050	0.0071	0.063	<0.0050	ND	ND	ND	<0.050
2 Methlynaphthalene	µg/g	0.59[2]	ND	<0.070	0.0094	0.12	<0.0050	ND	ND	ND	<0.050
1 and 2 Methlynaphthalene (2)	µg/g	0.59	ND	<0.050	0.016	0.18	<0.0071	ND	ND	ND	<0.071
Naphthalene	µg/g	0.09	ND	<0.050	0.026	**0.49**	<0.0050	ND	ND	ND	<0.050
Phenanthrene	µg/g	0.69	0.02	0.0089	0.42	**2**	0.062	0.013	0.039	ND	<0.050
Pyrene	µg/g	1	0.034	0.033	0.8	**2.4**	0.1	0.025	0.072	ND	<0.050

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	Sewer Trench Floor						
Sample ID			VS-ST-F1	VS-ST-F2	VS-EST-F1[3]	VS-EST-F2[3]	VS-EST-F3[3]	VS-EST-F4[3]	VS-EST-F5[3]
Date Sampled			2022-12-07	2022-12-08	2022-11-01	2022-11-01	2022-11-03	2022-11-08	2022-12-01
Sample Depth (mbgs)	mbgs		4-4.2	3.8-4.2	3.8-4.2	3.8-4.2	4.0	2.0	4.0-4.3
Parameter									
Acenaphthene	µg/g	0.072	0.008	<0.0050	ND	ND	ND	<0.0050	ND
Acenaphthylene	µg/g	0.093	<0.0050	<0.0050	ND	ND	ND	0.014	ND
Anthracene	µg/g	0.16	0.017	<0.0050	ND	ND	ND	0.021	ND
Benz(a)anthracene	µg/g	0.36	0.054	<0.0050	ND	ND	ND	0.075	ND
Benzo(a)pyrene	µg/g	0.3	0.05	<0.0050	ND	ND	ND	0.068	ND
Benzo(b)fluoranthene	µg/g	0.47	0.07	<0.0050	ND	ND	ND	0.081	ND
Benzo(g,h,i)perylene	µg/g	0.68	0.03	<0.0050	ND	ND	ND	0.041	ND
Benzo(k)fluoranthene	µg/g	0.48	0.026	<0.0050	ND	ND	ND	0.031	ND
Chrysene	µg/g	2.8	0.044	<0.0050	ND	ND	ND	0.051	ND
Dibenz(a,h)anthracene	µg/g	0.1	0.0071	<0.0050	ND	ND	ND	0.012	ND
Fluoranthene	µg/g	0.56	0.12	<0.0050	0.019	0.019	ND	0.13	ND
Fluorene	µg/g	0.12	0.0071	<0.0050	ND	ND	ND	<0.0050	ND
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.031	<0.0050	ND	ND	ND	0.041	ND
1 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	ND	ND	ND	<0.0050	ND
2 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	ND	ND	ND	<0.0050	ND
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.071	<0.071	ND	ND	ND	<0.0071	ND
Naphthalene	µg/g	0.09	<0.0050	<0.0050	ND	ND	ND	<0.0050	ND
Phenanthrene	µg/g	0.69	0.073	<0.0050	0.014	0.014	ND	0.025	ND
Pyrene	µg/g	1	0.096	<0.0050	0.015	0.015	ND	0.12	ND

Sample Location			BLD137									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD 137 NW SS4[3]	BLD 137 NW SS34[3]	BLD 137 NW SS44[3]	BLD 137 NW SS48[4]	BLD 137 NW DUP1 (Dup. of NW SS48)[4]	BLD 137 NW SS53[3]	BLD 137 NW SS60[3]	BLD 137 NW SS66[3]	BLD 137 SW SS6[4]	BLD 137 SW SS37[4]
Date Sampled			16-Oct-14	16-Oct-14	16-Oct-14	06-Nov-21	06-Nov-21	12-Nov-14	12-Nov-14	12-Nov-14	10-Nov-14	10-Nov-14
Sample Depth (mbgs)	mbgs		1.0	2.9	2.1	0.7	0.7	1.2	0.9	2.0	5.2	3.8
Parameter												
Acenaphthene	µg/g	0.072	0.024	<0.005	<0.005	0.015	0.011	<0.0050	<0.0050	0.0073	0.030	0.0092
Acenaphthylene	µg/g	0.093	0.013	<0.005	<0.005	0.012	0.0097	<0.0050	0.0072	<0.0050	<0.0050	<0.0050
Anthracene	µg/g	0.16	0.066	<0.005	<0.005	0.05	0.036	<0.0050	0.0077	0.018	0.031	0.020
Benz(a)anthracene	µg/g	0.36	0.19	<0.005	0.099	0.13	0.10	0.0083	0.036	0.056	0.029	<0.0050
Benzo(a)pyrene	µg/g	0.3	0.15	<0.005	0.077	0.11	0.082	0.0088	0.037	0.05	0.023	<0.0050
Benzo(b)fluoranthene	µg/g	0.47	0.21	<0.005	0.012	0.16	0.12	0.017	0.051	0.069	0.034	<0.0050
Benzo(g,h,i)perylene	µg/g	0.68	0.082	<0.005	0.0055	0.065	0.048	0.0088	0.022	0.03	0.018	<0.0050
Benzo(k)fluoranthene	µg/g	0.48	0.077	<0.005	<0.005	0.053	0.040	<0.0050	0.017	0.022	0.011	<0.0050
Chrysene	µg/g	2.8	0.16	<0.005	0.083	0.13	0.099	0.013	0.039	0.055	0.033	<0.0050
Dibenz(a,h)anthracene	µg/g	0.1	0.022	<0.005	<0.005	0.017	0.012	<0.0050	0.0053	0.0087	<0.0050	<0.0050
Fluoranthene	µg/g	0.56	0.41	<0.005	0.023	0.32	0.23	0.020	0.064	0.12	0.070	0.0056
Fluorene	µg/g	0.12	0.025	<0.005	<0.005	0.015	0.011	<0.0050	<0.0050	0.0053	0.037	0.017
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.09	<0.005	0.0055	0.069	0.052	0.0083	0.023	0.031	0.016	<0.0050
1 Methlynaphthalene	µg/g	0.59[2]	<0.005	<0.005	<0.005	<0.050	<0.050	<0.0050	<0.0050	<0.0050	0.0096	0.0092
2 Methlynaphthalene	µg/g	0.59[2]	<0.005	<0.005	<0.005	<0.050	<0.050	<0.0050	<0.0050	<0.0050	0.017	0.0066
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.005	<0.005	<0.005	--	--	--	--	--	0.0266	0.0158
Naphthalene	µg/g	0.09	0.0056	<0.005	<0.005	<0.050	<0.050	<0.0050	<0.0050	<0.0050	<0.020	0.012
Phenanthrene	µg/g	0.69	0.28	<0.005	0.014	0.15	0.10	0.012	0.023	0.062	0.073	0.0066
Pyrene	µg/g	1	0.32	<0.005	0.18	0.26	0.18	0.017	0.057	0.096	0.059	0.016

Sample Location			BLD137									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD 137 SW SS46[3]	BLD 137 SW SS62[3]	BLD 137 SW SS79[4]	BLD 137 SW SS96[4]	BLD 137 EW SS11[4]	BLD 137 EW SS31[3]	BLD 137 WW SS9[4]	BLD 137 WW SS19	BLD 137 WW SS30	BLD 137 WW SS50[4]
Date Sampled			10-Nov-14	10-Nov-14	12-Dec-14	12-Dec-14	04-Nov-14	04-Nov-14	10-Nov-14	10-Nov-14	10-Nov-14	15-Jan-15
Sample Depth (mbgs)	mbgs		4.3	4.0	1.5	0 to 1.5	1.0	1.9	4.0	1.4	2.0	5.0
Parameter												
Acenaphthene	µg/g	0.072	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.01	0.0083	<0.0050	<0.02
Acenaphthylene	µg/g	0.093	<0.0050	<0.0050	<0.0050	<0.0050	0.058	<0.0050	0.0064	0.0065	<0.0050	<0.02
Anthracene	µg/g	0.16	<0.0050	<0.0050	<0.0050	<0.0050	0.032	<0.0050	0.062	0.018	<0.0050	0.03
Benz(a)anthracene	µg/g	0.36	<0.0050	<0.0050	<0.0050	0.0071	0.11	<0.0050	0.24	0.056	<0.0050	0.10
Benzo(a)pyrene	µg/g	0.3	<0.0050	<0.0050	<0.0050	0.0071	0.14	<0.0050	0.19	0.051	<0.0050	0.10
Benzo(b)fluoranthene	µg/g	0.47	<0.0050	0.0066	<0.0050	0.011	0.20	<0.0050	0.27	0.075	<0.0050	0.15
Benzo(g,h,i)perylene	µg/g	0.68	<0.0050	<0.0050	<0.0050	0.0071	0.17	<0.0050	0.14	0.034	<0.0050	0.09
Benzo(k)fluoranthene	µg/g	0.48	<0.0050	<0.0050	<0.0050	<0.0050	0.075	<0.0050	0.091	0.025	<0.0050	0.09
Chrysene	µg/g	2.8	<0.0050	0.0066	<0.0050	0.0065	0.098	<0.0050	0.19	0.061	<0.0050	0.14
Dibenz(a,h)anthracene	µg/g	0.1	<0.0050	<0.0050	<0.0050	<0.0050	0.035	<0.0050	0.041	0.010	<0.0050	0.02
Fluoranthene	µg/g	0.56	<0.0050	0.11	<0.0050	0.015	0.18	<0.0050	0.41	0.13	<0.0050	0.24
Fluorene	µg/g	0.12	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	0.0071	<0.0050	<0.02
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.0050	<0.0050	<0.0050	<0.0050	0.17	<0.0050	0.14	0.037	<0.0050	0.05
1 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.02
2 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.02
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.0050	--	--	--	--	--	<0.0050	<0.0050	<0.0050	--
Naphthalene	µg/g	0.09	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050	0.010
Phenanthrene	µg/g	0.69	<0.0050	0.0073	<0.0050	0.0065	0.041	<0.0050	0.21	0.087	<0.0050	0.15
Pyrene	µg/g	1	<0.0050	0.0086	<0.0050	0.012	0.15	<0.0050	0.34	0.10	<0.0050	0.21

Sample Location			BLD126									
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	BLD126-2P1	BLD126-2P2 [5]	BLD126-2P3	BLD126-2P4	BLD126-2P5	BLD126-2P6	BLD126-2 SS 7	BLD126-2 SS17	BLD126-2 SS 25	BLD126-2 SS 30
Date Sampled			16-Sep-14	16-Sep-14	16-Sep-14	16-Sep-14	16-Sep-14	16-Sep-14	26-Sep-14	26-Sep-14	26-Sep-14	26-Sep-14
Sample Depth (mbgs)	mbgs		1.0	1.0	0.5	0.5	0.3	0.5	0.3	1.0	1.0	1.0
Parameter												
Acenaphthene	µg/g	0.072	<0.0050	**0.11**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	µg/g	0.093	<0.0050	<0.0050	<0.0050	<0.0050	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Anthracene	µg/g	0.16	<0.0050	**0.17**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Benz(a)anthracene	µg/g	0.36	0.019	0.32	0.016	<0.0050	0.024	0.017	0.016	<0.0050	<0.0050	<0.0050
Benzo(a)pyrene	µg/g	0.3	0.019	0.2	0.015	0.0052	0.029	0.022	0.015	<0.0050	<0.0050	<0.0050
Benzo(b)fluoranthene	µg/g	0.47	0.029	0.27	0.022	0.0088	0.042	0.027	0.028	0.0076	<0.0050	0.0075
Benzo(g,h,i)perylene	µg/g	0.68	0.014	0.073	0.010	<0.0050	0.021	0.014	0.012	<0.0050	<0.0050	<0.0050
Benzo(k)fluoranthene	µg/g	0.48	0.011	0.11	0.0077	<0.0050	0.017	0.011	0.0088	<0.0050	<0.0050	<0.0050
Chrysene	µg/g	2.8	0.02	0.26	0.019	0.0062	0.024	0.017	0.023	0.0061	<0.0050	<0.0050
Dibenz(a,h)anthracene	µg/g	0.1	<0.0050	0.03	<0.0050	<0.0050	0.0057	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Fluoranthene	µg/g	0.56	0.03	**0.88**	0.029	0.0098	0.031	0.028	0.035	0.0052	<0.0050	<0.0050
Fluorene	µg/g	0.12	<0.0050	**0.12**	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.014	0.092	0.0093	<0.0050	0.021	0.015	0.012	<0.0050	<0.0050	<0.0050
1 Methlynaphthalene	µg/g	0.59[2]	0.021	0.017	0.039	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2 Methlynaphthalene	µg/g	0.59[2]	0.019	0.017	0.036	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1 and 2 Methlynaphthalene (2)	µg/g	0.59	0.04	0.034	0.075	--	--	--	--	--	--	--
Naphthalene	µg/g	0.09	0.011	0.015	0.020	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	µg/g	0.69	0.029	**0.94**	0.047	0.0077	0.0099	0.017	0.018	<0.0050	<0.0050	<0.0050
Pyrene	µg/g	1	0.027	0.61	0.025	0.0088	0.027	0.024	0.028	<0.0050	<0.0050	<0.0050

Notes:

G / S	Guideline / Standard
--	Not analyzed
ND	Not detected
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	The methylnapthalene standards are applicable to both 1-methylnapthalene and 2-methylnapthalene, with the provision that if both are detected, the sum of the two must not exceed the standard.
(3)	Off-site sample location included for reference purposes only
(4)	Location of sample not provided in source report
(5)	As noted in DST Remediation Report, exceedance remediated with confirmatory sample BLD 126-2 SS30 (2017 DST Remediation Report)
(6)	No date was provided in the source report.

Table G1c - Verification Samples Analytical Results (Metals and Inorganics)

Sample Location			Western Sewer Trench								
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	VS-WST-NW-1	VS-WST-NW-2	VS-WST-SW-1	VS-WST-SW-2	VS-WST-WW-1	VS-WST-WW2	VS-WST-DUP-1 (Duplicate of VS-WST-WW2)	VS-WST-WW3	VS-WST-WW4
Date Sampled			10/27/2022	10/27/2022	10/27/2022	10/27/2022	10/27/2022	2022-11-01	2022-11-01	2022-11-01	2022-11-07
Sample Depth (mbgs)	mbgs		1.9-2.1	1.0-1.2	2.0-2.1	1.3-1.4	0.9-1.1	1.5	1.5	2.0	2.0
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.23
Arsenic	µg/g	18	1.7	1.1	2.1	2.7	3.4	4	3.9	4.1	2.9
Barium	µg/g	220	65	**410**	220	94	82	76	83	90	78
Beryllium	µg/g	2.5	0.44	1.1	0.69	0.4	0.48	0.45	0.41	0.52	0.48
Boron	µg/g	36	ND	6.4	ND	5.3	5.7	5.6	5.4	6.4	5.6
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	0.12	0.2	0.15	0.22	0.27	0.3	0.26	0.24	0.21
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	24	**120**	60	21	24	22	22	29	24
Cobalt	µg/g	21	8.5	**24**	15	8.2	9.3	8.4	8.6	11	8.9
Copper	µg/g	92	11	43	35	16	17	22	14	43	17
Iron	µg/g	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	10	13	11	23	24	18	16	21	24
Molybdenum	µg/g	2	0.64	0.7	0.58	0.53	0.8	0.56	0.6	0.83	0.74
Nickel	µg/g	82	16	68	42	16	18	18	17	23	18
Selenium	µg/g	1.5	ND	ND	ND	ND	ND	0.52	0.55	ND	<0.5
Silver	µg/g	0.5	ND	ND	ND	ND	ND	<0.2	ND	ND	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	0.14	0.49	0.29	0.15	0.16	0.16	0.14	0.21	0.19
Uranium	µg/g	2.5	0.54	1.7	0.75	0.42	0.48	0.39	0.4	0.54	0.54
Vanadium	µg/g	86	31	**100**	57	26	30	28	26	32	30
Zinc	µg/g	290	31	160	56	50	50	**500**	**420**	48	49
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--

Table G1c - Verification Samples Analytical Results (Metals and Inorganics)

Sample Location			Eastern Sewer Trench								
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	VS-EST-NW1 (2)	VS-EST-NW2	VS-EST-SW1	VS-EST-DUP1 (Duplicate of VS-EST-SW1)	VS-EST-SW2 (2)	VS-EST-EW1 (2)	VS-EST-EW2 (2)	VS-EST-EW3 (2)	VS-EST-EW4 (2)
Date Sampled			2022-11-01	2022-11-07	2022-11-03	2022-11-03	2022-11-08	2022-11-01	2022-11-01	2022-11-03	2022-11-09
Sample Depth (mbgs)	mbgs		2.0	2.0	3.0	3.0	2.0	2.5	2.5	3.0	2.0
Antimony	µg/g	1.3	<0.2	ND	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/g	18	1.4	1.4	1.6	1.4	1.4	1.6	1.4	1	1.1
Barium	µg/g	220	**240**	**250**	**230**	**250**	140	150	190	110	**250**
Beryllium	µg/g	2.5	0.65	0.67	0.65	0.69	0.54	0.53	0.56	0.3	0.67
Boron	µg/g	36	6.2	5.9	5.6	5.5	7.2	6.5	6.4	ND	6.5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--		--	--	--	--
Cadmium	µg/g	1.2	0.12	0.11	0.19	0.13	<0.1	0.1	0.13	<0.1	0.15
Calcium	µg/g	--	--	--	--	--		--	--	--	--
Chromium (Total)	µg/g	70	**80**	**80**	**72**	**76**	42	50	54	29	69
Cobalt	µg/g	21	18	18	17	18	12	14	14	7.8	17
Copper	µg/g	92	36	37	35	37	24	25	29	15	36
Iron	µg/g	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	9.4	9.3	15	13	13	10	11	7.2	13
Molybdenum	µg/g	2	0.62	0.66	0.64	0.63	0.59	0.57	0.54	<0.5	0.73
Nickel	µg/g	82	47	46	43	45	28	32	33	16	41
Selenium	µg/g	1.5	ND	<0.5	<0.5	<0.5	<0.5	ND	ND	<0.5	<0.5
Silver	µg/g	0.5	ND	<0.2	<0.2	<0.2	<0.2	ND	ND	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--		--	--	--	--
Thallium	µg/g	1	0.32	0.37	0.31	0.34	0.23	0.25	0.27	0.12	0.33
Uranium	µg/g	2.5	0.86	0.85	0.93	0.92	0.71	0.71	0.84	0.6	0.95
Vanadium	µg/g	86	77	76	74	77	46	52	59	35	77
Zinc	µg/g	290	90	91	100	110	57	60	76	34	140
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--

Table G1c - Verification Samples Analytical Results (Metals and Inorganics)

Sample Location			Sewer Trench Floor						
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	VS-ST-F1	VS-ST-F2	VS-EST-F1(2)	VS-EST-F2(2)	VS-EST-F3(2)	VS-EST-F4(2)	VS-EST-F5(2)
Date Sampled			2022-12-07	2022-12-08	2022-11-01	2022-11-01	2022-11-03	2022-11-08	2022-12-01
Sample Depth (mbgs)	mbgs		4-4.2	3.8-4.2	3.8-4.2	3.8-4.2	4.0	2.0	4.0-4.3
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/g	18	1.4	<1.0	2.3	1.2	<1.0	5.3	2
Barium	µg/g	220	150	150	110	**360**	65	70	150
Beryllium	µg/g	2.5	0.52	0.39	0.4	0.78	0.27	0.3	0.45
Boron	µg/g	36	5.2	<5.0	ND	6.9	<5.0	9.2	8.4
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	0.29	<0.1	0.13	0.15	<0.1	<0.1	0.13
Calcium	µg/g	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	46	37	28	**120**	22	17	25
Cobalt	µg/g	21	11	9.5	8.8	**25**	6.5	11	12
Copper	µg/g	92	25	19	15	54	8.5	13	18
Iron	µg/g	--	--	--	--	--	--	--	--
Lead	µg/g	120	16	6.5	9.1	9	5.4	26	19
Molybdenum	µg/g	2	<0.5	<0.5	ND	0.96	<0.5	**6.1**	0.87
Nickel	µg/g	82	29	21	18	67	14	18	24
Selenium	µg/g	1.5	<0.5	<0.5	ND	ND	<0.5	<0.5	<0.5
Silver	µg/g	0.5	<0.2	<0.2	ND	ND	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--
Thallium	µg/g	1	0.25	0.17	0.16	0.47	0.089	0.3	0.3
Uranium	µg/g	2.5	0.69	0.6	0.59	1.1	0.47	0.74	0.65
Vanadium	µg/g	86	49	41	36	**110**	24	18	25
Zinc	µg/g	290	80	41	45	130	39	26	39
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--

Table G1c - Verification Samples Analytical Results (Metals and Inorganics)

Sample Location			TP31											
Sample ID	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	TP31 SS1	TP31 SS5	TP31 SS9(2)	TP31 SS14(2)	TP31 SS20(2)	TP31 SS28(2)	TP31 DUP1 (dup of TP31 SS28)(2)	TP31 SS30(2)	TP31 SS36(2)	TP31 SGS2(2)	TP31 SGS3(2)	TP31 SGS5(2)
Date Sampled			2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	2014-09-16	--(3)	--(3)	--(3)
Sample Depth (mbgs)	**mbgs**		**0.35**	**1.00**	**1.30**	**1.10**	**0.45**	**1.10**	**1.10**	**1.30**	**1.40**	**0.40**	**0.90**	**1.20**
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	0.25	<0.2	<0.2	<0.2	<0.2	0.26	<1	<1	<1
Arsenic	µg/g	18	2.0	2.7	1.9	3.3	4.5	1.7	2.2	1.8	5.4	1	<1	<1
Barium	µg/g	220	77	88	57	78	120	72	89	75	83	70	20	30
Beryllium	µg/g	2.5	0.49	0.30	0.30	0.45	0.60	0.47	0.51	0.29	0.40	<0.5	<0.5	<0.5
Boron	µg/g	36	<5.0	5.5	<5.0	6.9	6.8	5.4	6.4	<5.0	5.3	--	--	--
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	0.11	0.14	<0.1	0.49	0.28	<0.1	0.23	0.13	0.14	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--	7200	4000	7000
Chromium (Total)	µg/g	70	12	11	15	21	20	18	18	12	14	15	<5	5
Cobalt	µg/g	21	5.8	5.0	5.7	7.1	9.2	7.1	9.6	5.3	6.5	5	<5	<5
Copper	µg/g	92	8.9	8.8	12	12	16	8.6	12	11	12	15	10	10
Iron	µg/g	--	--	--	--	--	--	--	--	--	--	13000	6800	7800
Lead	µg/g	120	7.4	13	6.4	18	22	11	12	13	15	22	2	10
Molybdenum	µg/g	2	0.54	0.75	<0.5	1.5	1.7	<0.5	0.61	0.69	1.4	<1	<1	<1
Nickel	µg/g	82	12	11	9.6	16	18	13	15	11	14	15	<5	5
Selenium	µg/g	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<1	<1
Silver	µg/g	0.5	<0.2	<0.2	<0.2	<0.2	0.25	<0.2	<0.2	<0.2	<0.2	<0.3	<0.3	<0.3
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--	<200	<200	<200
Thallium	µg/g	1	0.12	0.13	0.10	0.15	0.21	0.11	0.14	0.12	0.16	<1	<1	<1
Uranium	µg/g	2.5	0.20	0.40	0.47	0.48	0.49	0.39	0.39	0.48	0.51	--	--	--
Vanadium	µg/g	86	15	16	23	26	25	22	23	19	21	20	10	10
Zinc	µg/g	290	22	32	19	280	56	35	38	39	42	**520**	<20	**460**
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:

G / S	Guideline / Standard
--	Not analyzed

Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
	Exceedance interpreted to be naturally occurring
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	Off-site sample location included for reference purposes only
(3)	No date was provided in the source report.

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	SGP-SP1	SGP-SP2	SGP-SP3	SGP-SP4	SGP-SP5		SGP-SP6	SGP-SP7	SGP-SP8
Sample ID			**SGP-SP1**	**SGP-SP2**	**SGP-SP3**	**SGP-SP4**	**SGP-SP5**	**SGP-SP-DUP1 (Duplicate of SGP-SG5)**	**SGP-SP6**	**SGP-SP7**	**SGP-SP8**
Date Sampled			**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**
Sample Depth (mbgs)	**mbgs**		**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**
Parameter											
Benzene	µg/g	0.02	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Toluene	µg/g	0.20	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Ethylbenzene	µg/g	0.05	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
o-Xylene	µg/g	--	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
p+m-Xylene	µg/g	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Xylenes (Total)	µg/g	0.05	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
F1 (C6 to C10)	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F1 (C6 to C10) minus BTEX	µg/g	25	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	--	--	--	--	--	--	--	--	--
F3 (C16 to C34)	µg/g	240	<50	<50	55	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--									
F4 (C34 to C50)	µg/g	120	55	<50	90	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gravimetric Heavy Hydrocarbons	µg/g	--									
Moisture Content	%	--	5	8.3	15	3	7.5	7.7	11	7.8	20
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C)** [1]	Golder 2020 Stockpile investigation										
Sample ID			SA-1S	SA-1D	SA-2S	SA-2D	SA-3S	DUP-1 (field DUP of SA-3S)	SA-3D	SA-4S	SA-4D	SA-5S	SA-5D
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p+m-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	--	--	--	--	--	--	--	--	--	--	--
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	22.8	30.7	12.1	11.5	4.7	7.5	21	26	32.9	29.7	29.9
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	Golder 2020 Stockpile investigation										
Sample ID			SA-6S	SA-6D	SA-7S	SA-7D	SA-8S	SA-8D	SA-9S	SA-9D	SA-10S	SA-10D	DUP-2 (field DUP of SA-10D)
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p+m-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	--	--	--	--	--	--	--	--	--	--	--
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	29	27.9	26.4	24.3	27.4	26	24.7	25.1	27.5	29	30
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	Golder 2020 Stockpile investigation										
Sample ID			SA-11S	SA-11D	SA-12S	SA-12D	SA-13S	SA-13D	SA-14S	SA-14D	SA-15S	SA-15D	SA-16S
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
p+m-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	--	--	--	--	--	--	--	--	--	--	--
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	25.9	25.4	26.6	31.3	25.9	26.2	6.6	4.4	23.5	24.6	23.5
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	Golder 2020 Stockpile investigation								
Sample ID			DUP-3 (field DUP of SA-16S)	SA-16D	SA-17S	SA-17D	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2020-07-09**	**2020-07-09**	**2020-07-09**	**2020-07-09**	**2020-07-09**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**
Parameter											
Benzene	µg/g	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Toluene	µg/g	0.20	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethylbenzene	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
o-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--
p+m-Xylene	µg/g	--	<0.05	<0.05	<0.05	<0.05	--	--	--	--	--
Xylenes (Total)	µg/g	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
F1 (C6 to C10)	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	<5	<5	<5	<5	<5	<5	<5	<5	<5
F2 (C10 to C16)	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F2 (C10 to C16) minus Naphthalene	µg/g	10	<10	<10	<10	<10	<10	<10	<10	<10	<10
F3 (C16 to C34)	µg/g	240	<50	<50	<50	<50	<50	<50	<50	<50	<50
F3 (C16 to C34) minus PAHs	µg/g	--	<50	<50	<50	<50	<50	<50	<50	<50	<50
F4 (C34 to C50)	µg/g	120	<50	<50	<50	55	<50	<50	<50	<50	<50
Reached Baseline at C50	--	--	--	--	--	--	--	--	--	--	--
Gravimetric Heavy Hydrocarbons	µg/g	--	--	--	--	--	--	--	--	--	--
Moisture Content	%	--	22.4	24.7	20.2	18.8	26.2	23.8	25.9	26.5	23.8
TPgH (Gas C5-C10)	µg/g	--	--	--	--	--	--	--	--	--	--
TEH (Diesel, C10-C24)	µg/g	--	--	--	--	--	--	--	--	--	--
TPH (Gas/Diesel)	µg/g	--	--	--	--	--	--	--	--	--	--
Petroleum Hydrocarbons (heavy oils)	µg/g	--	--	--	--	--	--	--	--	--	--

Notes:

G / S	Guideline / Standard
--	Not analyzed
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	SGP-SP1	SGP-SP2	SGP-SP3	SGP-SP4	SGP-SP5		SGP-SP6	SGP-SP7	SGP-SP8
Sample ID			**SGP-SP1**	**SGP-SP2**	**SGP-SP3**	**SGP-SP4**	**SGP-SP5**	**SGP-SP-DUP1 (Duplicate of SGP-SG5)**	**SGP-SP6**	**SGP-SP7**	**SGP-SP8**
Date Sampled			**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**	**2022-11-10**
Sample Depth (mbgs)	**mbgs**		**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**	**0.15**
Parameter											
Acenaphthene	µg/g	0.072	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Acenaphthylene	µg/g	0.093	<0.0050	<0.0050	<0.0050	0.005	0.0061	0.0052	0.006	<0.0050	<0.0050
Anthracene	µg/g	0.16	0.0052	0.0053	<0.0050	0.0075	0.0053	<0.0050	0.0093	0.0059	<0.0050
Benz(a)anthracene	µg/g	0.36	0.019	0.021	0.022	0.033	0.027	0.019	0.046	0.023	0.0089
Benzo(a)pyrene	µg/g	0.3	0.026	0.018	0.022	0.027	0.036	0.027	0.053	0.023	0.0091
Benzo(b)fluoranthene	µg/g	0.47	0.039	0.028	0.032	0.04	0.047	0.037	0.07	0.03	0.013
Benzo(g,h,i)perylene	µg/g	0.68	0.018	0.014	0.026	0.021	0.038	0.033	0.045	0.019	0.01
Benzo(k)fluoranthene	µg/g	0.48	0.013	0.0089	0.011	0.013	0.016	0.012	0.024	0.01	<0.0050
Chrysene	µg/g	2.8	0.025	0.019	0.023	0.028	0.024	0.018	0.04	0.022	0.0084
Dibenz(a,h)anthracene	µg/g	0.1	<0.0050	<0.0050	<0.0050	0.0053	0.0071	0.0059	0.0098	<0.0050	<0.0050
Fluoranthene	µg/g	0.56	0.031	0.038	0.046	0.062	0.037	0.031	0.065	0.047	0.016
Fluorene	µg/g	0.12	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Indeno(1,2,3-cd)pyrene	µg/g	0.23	0.016	0.012	0.019	0.019	0.032	0.026	0.042	0.017	0.0075
1 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
2 Methlynaphthalene	µg/g	0.59[2]	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071	<0.0071
Naphthalene	µg/g	0.09	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Phenanthrene	µg/g	0.69	0.019	0.021	0.03	0.025	0.017	0.018	0.034	0.027	0.008
Pyrene	µg/g	1	0.034	0.033	0.038	0.05	0.035	0.028	0.057	0.037	0.015

Sample Location			Golder 2020 Stockpile investigation									
Sample ID	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C)** [1]	SA-1S	SA-1D	SA-2S	SA-2D	SA-3S	DUP-1 (field DUP of SA-3S)	SA-3D	SA-4S	SA-4D	SA-5S	SA-5D
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.06	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.087	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.095	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.153	0.075	<0.05	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	0.051	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	1	0.071	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.127	0.065	<0.05	<0.05

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	Golder 2020 Stockpile investigation										
Sample ID			SA-6S	SA-6D	SA-7S	SA-7D	SA-8S	SA-8D	SA-9S	SA-9D	SA-10S	SA-10D	DUP-2 (field DUP of SA-10D)
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	<0.05	0.111	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	0.071	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	<0.05	0.133	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	<0.05	0.086	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	<0.05	<0.05	0.088	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.081	<0.05	0.256	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	1	0.069	<0.05	0.229	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) [1]	Golder 2020 Stockpile investigation										
Sample ID			SA-11S	SA-11D	SA-12S	SA-12D	SA-13S	SA-13D	SA-14S	SA-14D	SA-15S	SA-15D	SA-16S
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	--	--	--	--	--	--	--
Parameter													
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.056	0.112	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.089	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.068	0.091	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.059	0.07	<0.05
Chrysene	µg/g	2.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.074	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	<0.05	<0.05	0.079	<0.05	<0.05	<0.05	<0.05	<0.05	0.143	0.232	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.065	<0.05
Pyrene	µg/g	1	<0.05	<0.05	0.061	<0.05	<0.05	<0.05	<0.05	<0.05	0.118	0.183	<0.05

Sample Location	**Unit**	**MECP Table 1 Standard (R/P/I/I/C/C) [1]**	Golder 2020 Stockpile investigation								
Sample ID			DUP-3 (field DUP of SA-16S)	SA-16D	SA-17S	SA-17D	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7
Date Sampled			**2021-02-19**	**2021-02-19**	**2021-02-19**	**2021-02-19**	**2020-07-09**	**2020-07-09**	**2020-07-09**	**2020-07-09**	**2020-07-09**
Sample Depth (mbgs)	**mbgs**		--	--	--	--	**0.75**	**0.75**	**0.75**	**0.75**	**0.75**
Parameter											
Acenaphthene	µg/g	0.072	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Acenaphthylene	µg/g	0.093	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Anthracene	µg/g	0.16	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benz(a)anthracene	µg/g	0.36	<0.05	<0.05	<0.05	0.054	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene	µg/g	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(b)fluoranthene	µg/g	0.47	<0.05	<0.05	0.057	0.096	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(g,h,i)perylene	µg/g	0.68	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(k)fluoranthene	µg/g	0.48	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chrysene	µg/g	2.8	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dibenz(a,h)anthracene	µg/g	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fluoranthene	µg/g	0.56	0.077	0.06	0.092	0.149	<0.05	<0.05	<0.05	0.09	<0.05
Fluorene	µg/g	0.12	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-cd)pyrene	µg/g	0.23	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
1 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--
2 Methlynaphthalene	µg/g	0.59[2]	--	--	--	--	--	--	--	--	--
1 and 2 Methlynaphthalene (2)	µg/g	0.59	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Naphthalene	µg/g	0.09	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Phenanthrene	µg/g	0.69	<0.05	<0.05	<0.05	0.052	<0.05	<0.05	<0.05	<0.05	<0.05
Pyrene	µg/g	1	0.066	0.051	0.07	0.118	<0.05	<0.05	<0.05	0.08	<0.05

Notes:

G / S	Guideline / Standard
--	Not analyzed
ND	Not detected
Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.
(2)	The methylnapthalene standards are applicable to both 1-methylnapthalene and 2-methylnapthalene, with the provision that if both are detected, the sum of the two must not exceed the standard.

Table G2c - Backfill Analytical Results (Metals and Inorganics)

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	SGP-SP1	SGP-SP2	SGP-SP3	SGP-SP4	SGP-SP5		SGP-SP6	SGP-SP7	SGP-SP8
eck the master sh			SGP-SP1	SGP-SP2	SGP-SP3	SGP-SP4	SGP-SP5	SGP-SP-DUP1 (Duplicate of SGP-SG5)	SGP-SP6	SGP-SP7	SGP-SP8
Date Sampled			2022-11-10	2022-11-10	2022-11-10	2022-11-10	2022-11-10	2022-11-10	2022-11-10	2022-11-10	2022-11-10
Sample Depth (mbgs)	mbgs		0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Antimony	µg/g	1.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Arsenic	µg/g	18	2.3	2.6	2.3	2	2	2.1	2.2	1.2	1.2
Barium	µg/g	220	98	160	200	180	160	170	110	**300**	**230**
Beryllium	µg/g	2.5	0.32	0.33	0.56	0.3	0.31	0.31	0.34	0.74	0.59
Boron	µg/g	36	13	11	9.1	12	11	11	12	5	6.8
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	<0.1	<0.1	0.12	<0.1	0.12	<0.1	0.12	0.11	<0.1
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	15	13	50	11	13	13	14	**85**	60
Cobalt	µg/g	21	6.7	8.4	14	7.6	7.7	8.1	7.2	20	15
Copper	µg/g	92	10	12	28	11	11	11	11	42	32
Iron	µg/g	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	13	15	16	11	15	16	19	11	9.5
Molybdenum	µg/g	2	<0.5	0.71	0.57	0.66	0.62	0.51	0.5	0.54	<0.5
Nickel	µg/g	82	12	16	33	13	14	14	13	50	37
Selenium	µg/g	1.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Silver	µg/g	0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	0.13	0.21	0.27	0.15	0.15	0.16	0.15	0.4	0.31
Uranium	µg/g	2.5	0.28	0.32	0.55	0.22	0.25	0.25	0.27	0.74	0.61
Vanadium	µg/g	86	15	15	50	12	14	15	16	85	62
Zinc	µg/g	290	25	30	64	23	20	21	26	100	76
Chromium, Hexavalent	µg/g	70	--	--	--	--	--	--	--	--	--
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	--	--	--	--	--	--	--	--	--
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--

Table G2c - Backfill Analytical Results (Metals and Inorganics)

Sample Location			Golder 2020 Stockpile investigation										
eck the master sh	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	SA-1S	SA-1D	SA-2S	SA-2D	SA-3S	DUP-1 (field DUP of SA-3S)	SA-3D	SA-4S	SA-4D	SA-5S	SA-5D
Date Sampled			02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021
Sample Depth (mbgs)	mbgs		--	--	--	--	--	--	--	--	--	--	--
Antimony	µg/g	1.3	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	1	2	1	1	1	<1	2	2	2	2	2
Barium	µg/g	220	**338**	**331**	80.3	171	119	63.6	**227**	**351**	**344**	**421**	**407**
Beryllium	µg/g	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Boron	µg/g	36	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	**98**	**97**	22	39	32	18	65	**106**	**97**	**116**	**114**
Cobalt	µg/g	21	20.5	**21.6**	6	8.9	7.7	5	14.3	20.3	18.3	**22.7**	**24.9**
Copper	µg/g	92	42.6	42.2	10.2	17.6	14.2	7.5	29.4	45.3	40.4	49.5	51.3
Iron	µg/g	--	--	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	7	12	3	4	3	2	6	12	7	8	8
Molybdenum	µg/g	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Nickel	µg/g	82	58	55	16	24	20	13	39	56	51	64	65
Selenium	µg/g	1.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Uranium	µg/g	2.5	0.93	1.06	1.65	<0.50	<0.50	<0.50	0.82	1.22	0.98	1.13	1.13
Vanadium	µg/g	86	**95.1**	**93.3**	24	39.4	32.7	19.9	65.9	**102**	**93.9**	**113**	**110**
Zinc	µg/g	290	114	117	40	56	49	35	86	135	108	129	128
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--	--	--

Table G2c - Backfill Analytical Results (Metals and Inorganics)

Sample Location			Golder 2020 Stockpile investigation										
eck the master sh	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	SA-6S	SA-6D	SA-7S	SA-7D	SA-8S	SA-8D	SA-9S	SA-9D	SA-10S	SA-10D	DUP-2 (field DUP of SA-10D)
Date Sampled			02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	2021-02-19
Sample Depth (mbgs)	mbgs		--	--	--	--	--	--	--	--	--	--	
Antimony	µg/g	1.3	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	2	2	2	2	2	1	2	1	1	2	1
Barium	µg/g	220	**335**	**403**	**303**	**433**	**463**	**427**	**434**	**418**	**359**	**390**	**356**
Beryllium	µg/g	2.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.5	0.5
Boron	µg/g	36	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--	--	
Cadmium	µg/g	1.2	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--	--	105
Chromium (Total)	µg/g	70	**93**	**112**	**86**	**117**	**129**	**117**	**118**	**116**	**105**	**114**	--
Cobalt	µg/g	21	20.1	23.3	17.5	**22.6**	**24.9**	**22.6**	**24.4**	**22.9**	20.8	**22.8**	**21.5**
Copper	µg/g	92	39.3	51.8	37.3	47	56.8	47.9	49.4	46.9	36.3	39.4	37.6
Iron	µg/g	--	--	--	--	--	--	--	--	--	--	--	
Lead	µg/g	120	17	9	9	9	8	7	9	9	9	8	8
Molybdenum	µg/g	2	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Nickel	µg/g	82	52	62	49	64	70	63	65	64	54	59	55
Selenium	µg/g	1.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	1	<0.8
Silver	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Uranium	µg/g	2.5	1.14	1.01	0.94	1.06	0.94	0.96	1.04	1.22	1.49	1.53	1.65
Vanadium	µg/g	86	**89.6**	**106**	81.8	**112**	**127**	**111**	**116**	**112**	**96**	**100**	**93.7**
Zinc	µg/g	290	127	132	103	133	142	138	138	131	132	140	137
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--	--	--

Table G2c - Backfill Analytical Results (Metals and Inorganics)

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	Golder 2020 Stockpile investigation											
eck the master sh			SA-11S	SA-11D	SA-12S	SA-12D	SA-13S	SA-13D	SA-14S	SA-14D	SA-15D	SA-16S	DUP-3 (field DUP of SA-16S)	SA-16D
Date Sampled			02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021	02/19/2021
Sample Depth (mbgs)	mbgs		--	--	--	--	--	--	--	--	--	--	--	--
Antimony	µg/g	1.3	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	2	2	2	2	2	2	1	<1	2	2	2	2
Barium	µg/g	220	**487**	**419**	**329**	**397**	**341**	**308**	**254**	**384**	**408**	**391**	**358**	**444**
Beryllium	µg/g	2.5	0.5	0.4	0.5	0.4	0.4	<0.4	<0.4	<0.4	0.4	0.5	0.4	0.5
Boron	µg/g	36	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Boron (Hot Water Extractable)	µg/g	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	µg/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	**146**	**127**	**101**	**121**	**105**	**95**	**75**	37	**126**	**113**	**109**	**130**
Cobalt	µg/g	21	**29.3**	**24.1**	20.2	**24.6**	19.9	19.4	15.3	8.5	**24.7**	**23.4**	**22.6**	**28.5**
Copper	µg/g	92	65.5	55.4	45.2	49.7	45.4	40	32.8	16.6	55.8	48.1	45.8	54.4
Iron	µg/g	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	8	7	11	8	7	8	9	3	8	11	12	8
Molybdenum	µg/g	2	0.6	<0.5	0.5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	0.6	0.7
Nickel	µg/g	82	81	70	56	65	57	52	42	23	69	62	59	72
Selenium	µg/g	1.5	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Silver	µg/g	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5
Uranium	µg/g	2.5	1.22	1.1	1.04	1.22	1.02	1.15	0.75	0.53	1.09	1.27	1.51	1.95
Vanadium	µg/g	86	**133**	**116**	**95.7**	**112**	**97.7**	**90.6**	72.6	37.1	**120**	**109**	**102**	**120**
Zinc	µg/g	290	162	142	121	135	133	129	95	54	146	139	138	153
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	µg/g	0.27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Sodium Adsorption Ratio	NA	--	--	--	--	--	--	--	--	--	--	--	--	--
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	--	--	--	--	--	--	--	--	--	--

Table G2c - Backfill Analytical Results (Metals and Inorganics)

Sample Location	Unit	MECP Table 1 Standard (R/P/I/I/C/C) (1)	Golder 2020 Stockpile investigation								
eck the master sh			SA-17S	SA-17D	SPD-SA1	SPD-SA2	SPD-SA3	SPD-SA4	SPD-SA5	SPD-SA6	SPD-SA7
Date Sampled			02/19/2021	02/19/2021	07/08/2020	07/08/2020	07/09/2020	07/09/2020	07/09/2020	07/09/2020	07/09/2020
Sample Depth (mbgs)	mbgs		--	--	0.75	0.75	0.75	0.75	0.75	0.75	0.75
Antimony	µg/g	1.3	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8	<0.8
Arsenic	µg/g	18	4	6	2	2	2	2	1	2	2
Barium	µg/g	220	116	157	**374**	**246**	**348**	**416**	**317**	**381**	**327**
Beryllium	µg/g	2.5	0.5	0.5	1	0.5	0.8	1	0.7	0.8	0.9
Boron	µg/g	36	11	11	5	<5	<5	<5	<5	<5	5
Boron (Hot Water Extractable)	µg/g	--	--	--	0.28	0.14	0.26	0.15	<0.10	<0.10	0.34
Cadmium	µg/g	1.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Calcium	µg/g	--	--	--	--	--	--	--	--	--	--
Chromium (Total)	µg/g	70	18	33	**113**	**71**	**111**	**131**	**98**	**120**	**101**
Cobalt	µg/g	21	8.3	12.4	**21.8**	13.6	21.4	**26.7**	19.9	**25.6**	17.9
Copper	µg/g	92	11.7	19.1	57	37	50	59	49	59	45
Iron	µg/g	--	--	--	--	--	--	--	--	--	--
Lead	µg/g	120	11	16	9	13	9	8	6	8	11
Molybdenum	µg/g	2	0.6	0.8	<0.5	0.5	<0.5	<0.5	<0.5	0.6	<0.5
Nickel	µg/g	82	15	24	58	39	56	69	53	64	46
Selenium	µg/g	1.5	<0.8	<0.8	0.7	0.5	0.6	0.4	<0.4	0.5	0.9
Silver	µg/g	0.5	<0.5	<0.5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sodium	µg/g	NA	--	--	--	--	--	--	--	--	--
Thallium	µg/g	1	<0.5	<0.5	0.5	<0.4	0.4	0.5	0.4	0.5	0.4
Uranium	µg/g	2.5	<0.50	0.65	1.7	0.8	1.1	1.4	0.9	1.2	2.1
Vanadium	µg/g	86	21	35.2	**102**	69	**100**	**119**	**90**	**113**	**94**
Zinc	µg/g	290	33	55	146	131	134	152	114	136	140
Chromium, Hexavalent	µg/g	70	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Cyanide, Free	µg/g	0.051	--	--	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Mercury	µg/g	0.27	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Electrical Conductivity (2:1)	mS/cm	0.57	--	--	0.133	0.143	0.098	0.057	0.124	0.104	0.11
Sodium Adsorption Ratio	NA	--	--	--	0.208	0.841	0.277	0.179	0.443	0.394	0.193
pH, 2:1 CaCl2 Extraction	pH Units	--	--	--	7.46	7.64	7.2	7.09	7.42	7.49	7.32

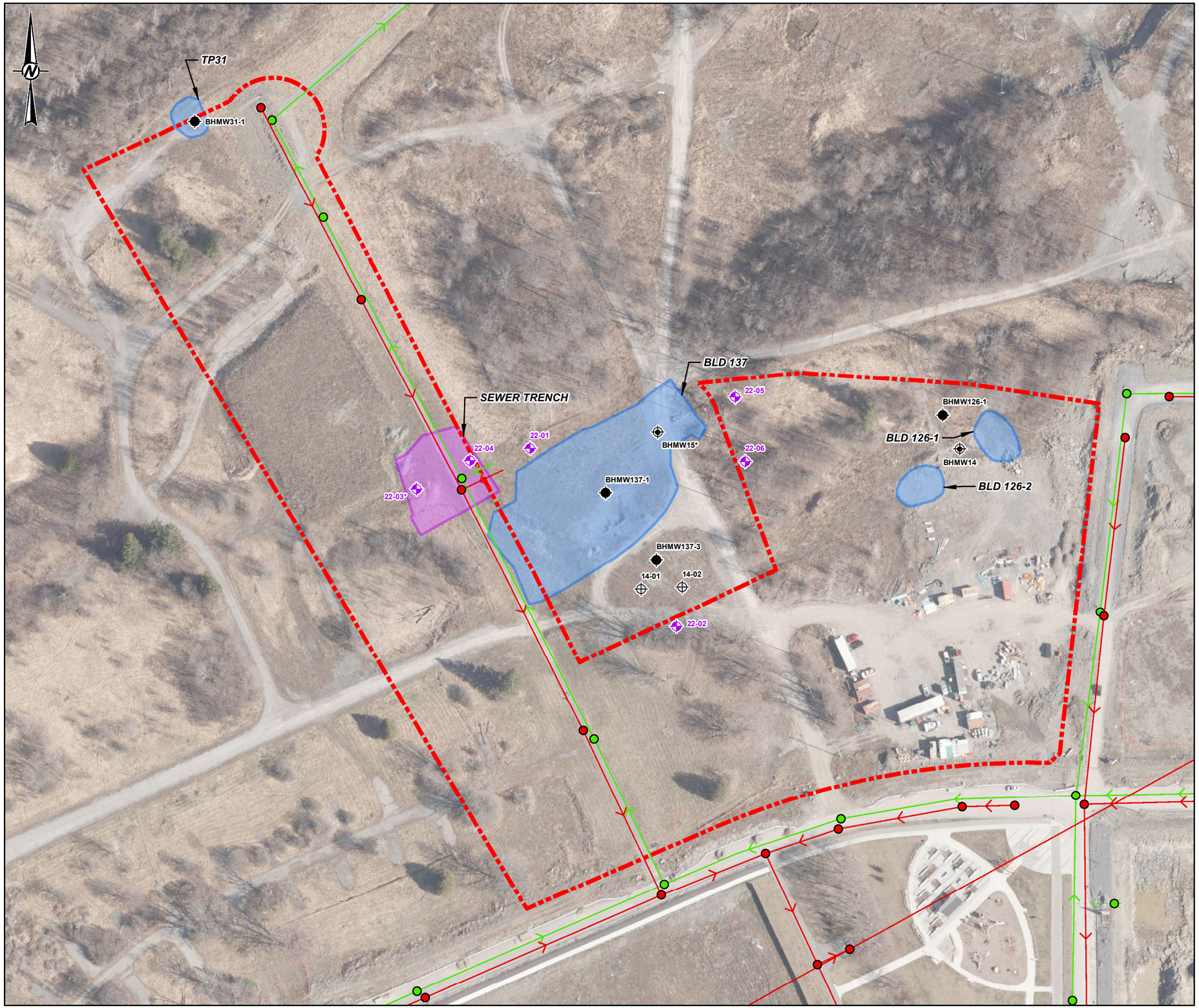
Table G2c - Backfill Analytical Results (Metals and Inorganics)

Notes:

G / S	Guideline / Standard
--	Not analyzed

Value	Parameters exceeds Table 1 criteria.
Value	RDL exceeds Table 1 criteria
	Sample location has been excavated and removed from site.
	Exceedance interpreted to be naturally occuring
(1)	Ontario Reg 153/04 (2011) Table 1: Full Depth Background Site Condition Standards, Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use for Soil.

Figures



LEGEND

- MONITORING WELL LOCATION (GOLDER, 2022)
- MONITORING WELL LOCATION (GOLDER, 2019)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2015)
- BOREHOLE/MONITORING WELL LOCATION (DST, 2009)
- STORM SEWER ALIGNMENT
- SANITARY SEWER ALIGNMENT
- 2022 REMEDIATION (WSP 2022)
- HISTORICAL REMEDIATION (DST 2014/15)
- PHASE TWO PROPERTY AND RSC BOUNDARY

NOTE(S)

1. ALL DATA IN µg/L
2. *MONITORING WELL DECOMMISSIONED AS PART OF REMEDIAL WORK

REFERENCE(S)

1. COORDINATE SYSTEM: NAD 1983 MTM 9

0 15 30 60

1:1,500 METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
REMEDIAL EXCAVATIONS AT THE RSC PROPERTY

CONSULTANT

YYYY-MM-DD	2023-01-16
DESIGNED	----
PREPARED	JEM
REVIEWED	TL
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	**G1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm

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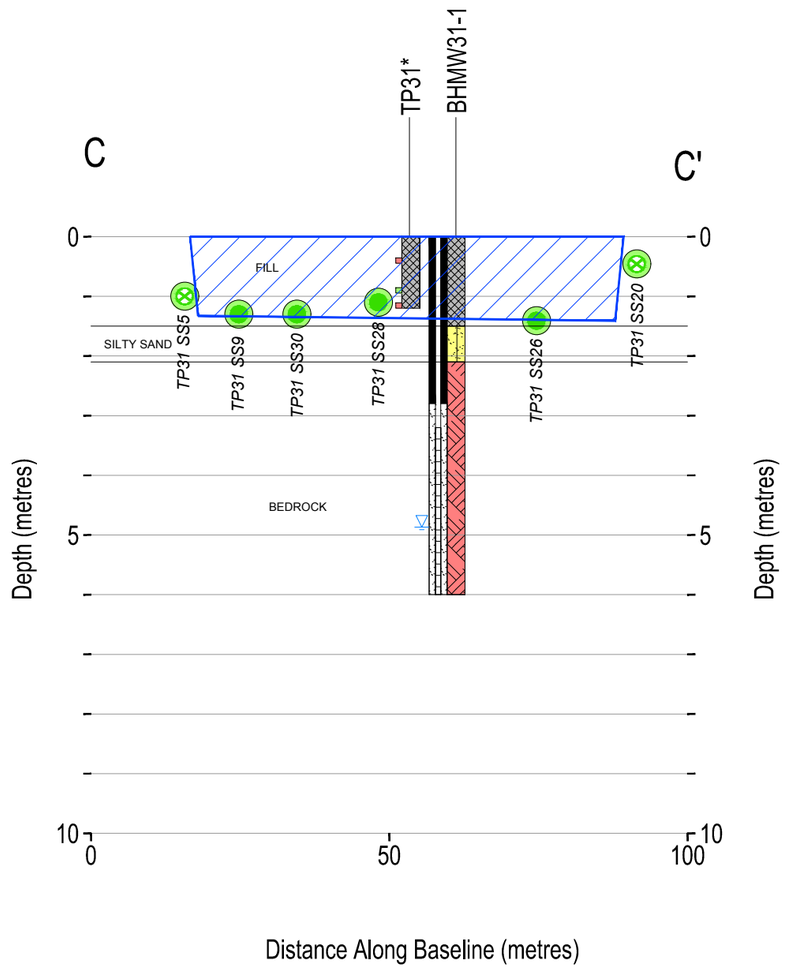

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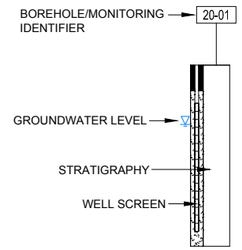


PHASE TWO PROPERTY AND RSC BOUNDARY

BEDROCK

FILL

SILTY SAND

SAMPLE MEETS THE TABLE 1 STANDARD

SAMPLE EXCEEDS THE TABLE 1 STANDARD

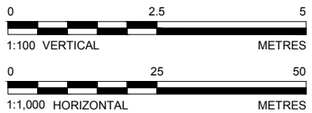
AREA OF REMEDIAL EXCAVATION

FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE
5. *OFF-SITE DATA INCLUDED FOR REFERENCE PURPOSES ONLY



CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 6, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION C-C' WITH METALS ANALYSIS AND EXCEEDANCES IN SOIL AT REMEDIATION TP-31

CONSULTANT

YYYY-MM-DD	2021-12-17
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G2A

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

0 25 mm

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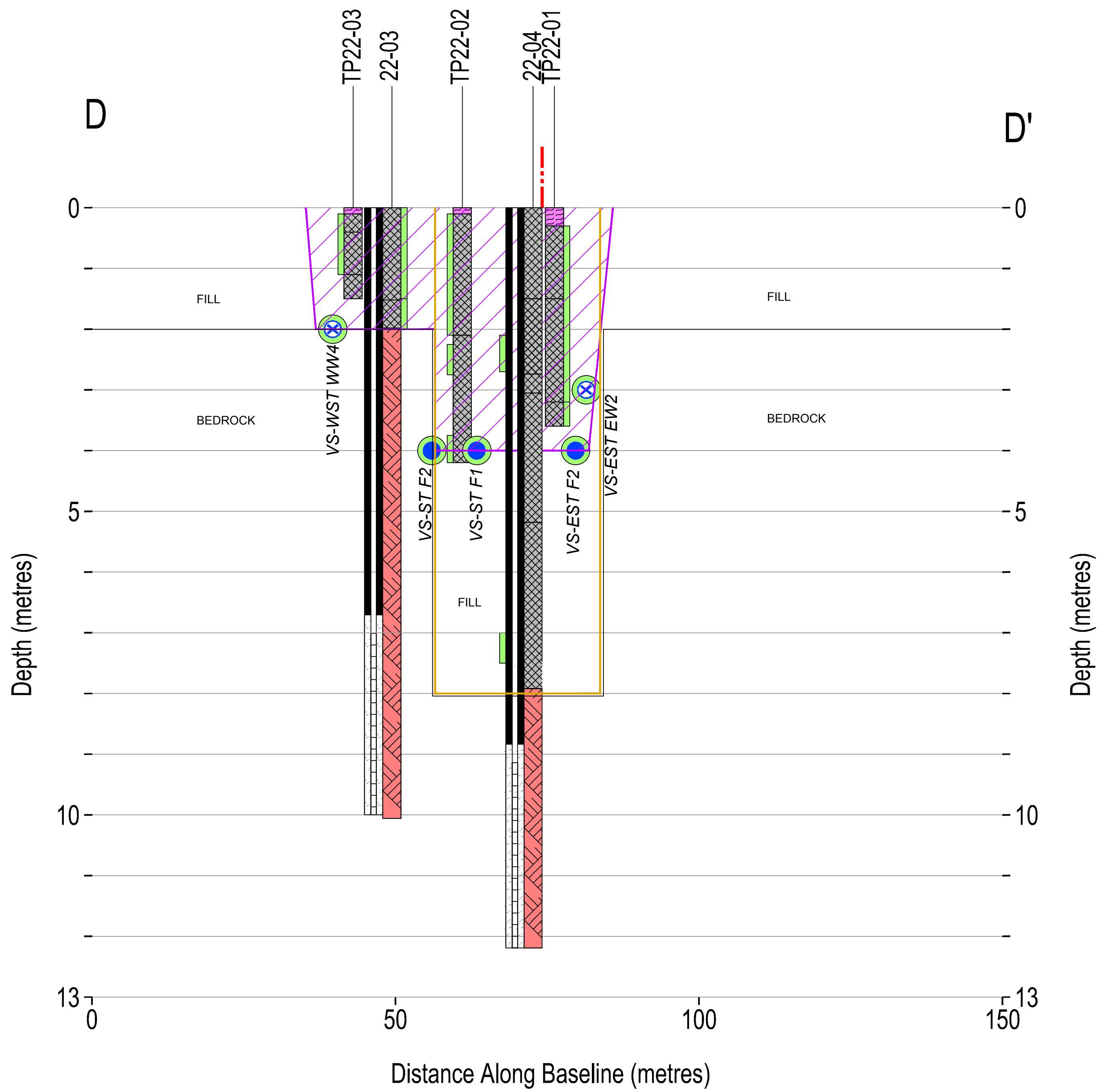


LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01

GROUNDWATER LEVEL

STRATIGRAPHY

WELL SCREEN

PHASE TWO PROPERTY AND RSC BOUNDARY

SEWER TRENCH

TOPSOIL

BEDROCK

FILL

SAMPLE MEETS THE TABLE 1 STANDARD

SAMPLE EXCEEDS THE TABLE 1 STANDARD

AREA OF REMEDIAL EXCAVATION

FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION

WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

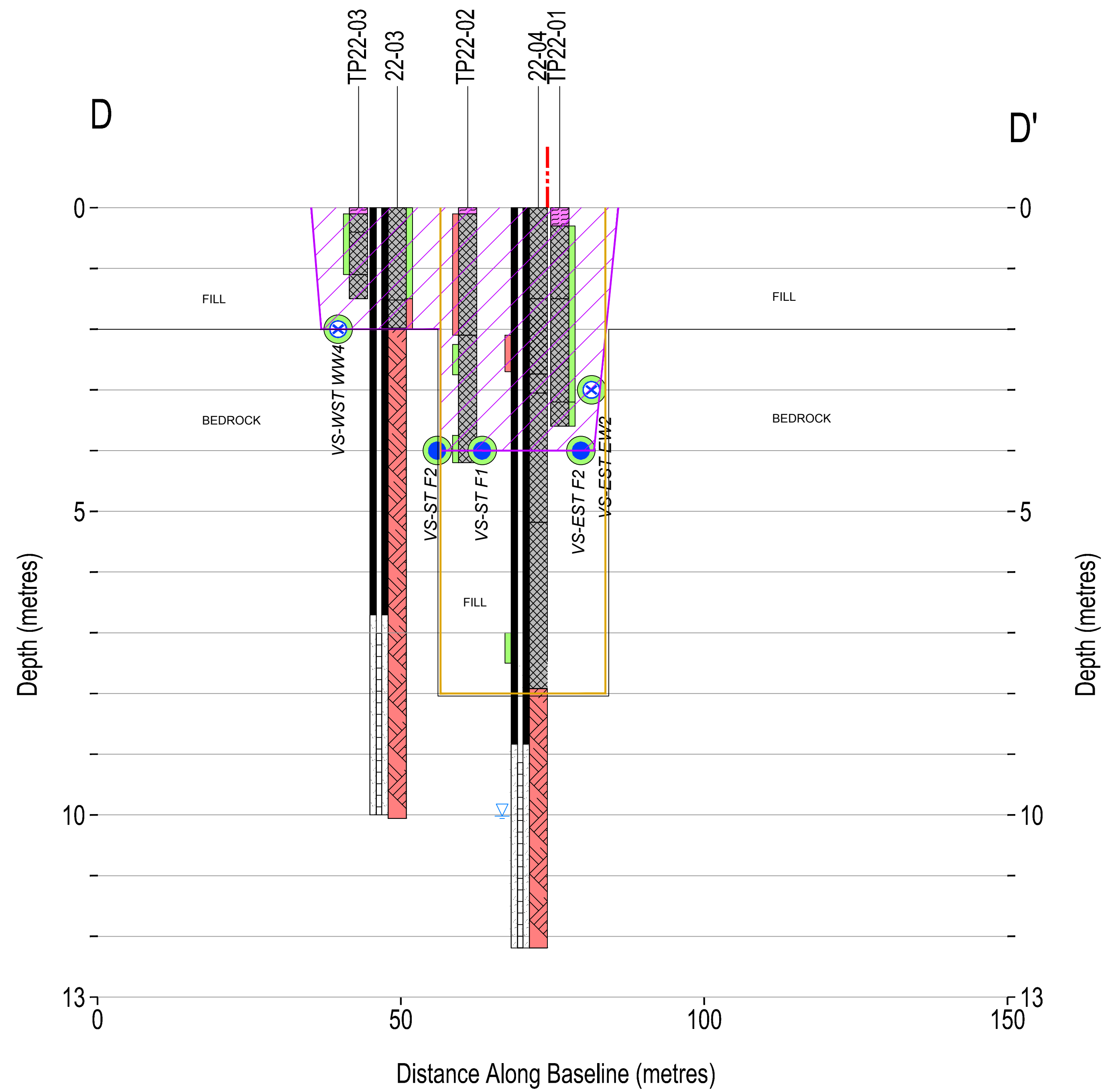
TITLE
CROSS-SECTION D-D' WITH METALS ANALYSIS AND EXCEEDANCES IN THE SEWER TRENCH REMEDIATION

CONSULTANT

wsp

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G3A



LEGEND

BOREHOLE/MONITORING IDENTIFIER — 20-01

GROUNDWATER LEVEL

STRATIGRAPHY

WELL SCREEN

PHASE TWO PROPERTY AND RSC BOUNDARY

SEWER TRENCH

TOPSOIL

BEDROCK

FILL

SAMPLE MEETS THE TABLE 1 STANDARD

SAMPLE EXCEEDS THE TABLE 1 STANDARD

AREA OF REMEDIAL EXCAVATION

FLOOR VERIFICATION SAMPLE FROM 2022 REMEDIATION

WALL VERIFICATION SAMPLE FROM 2022 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

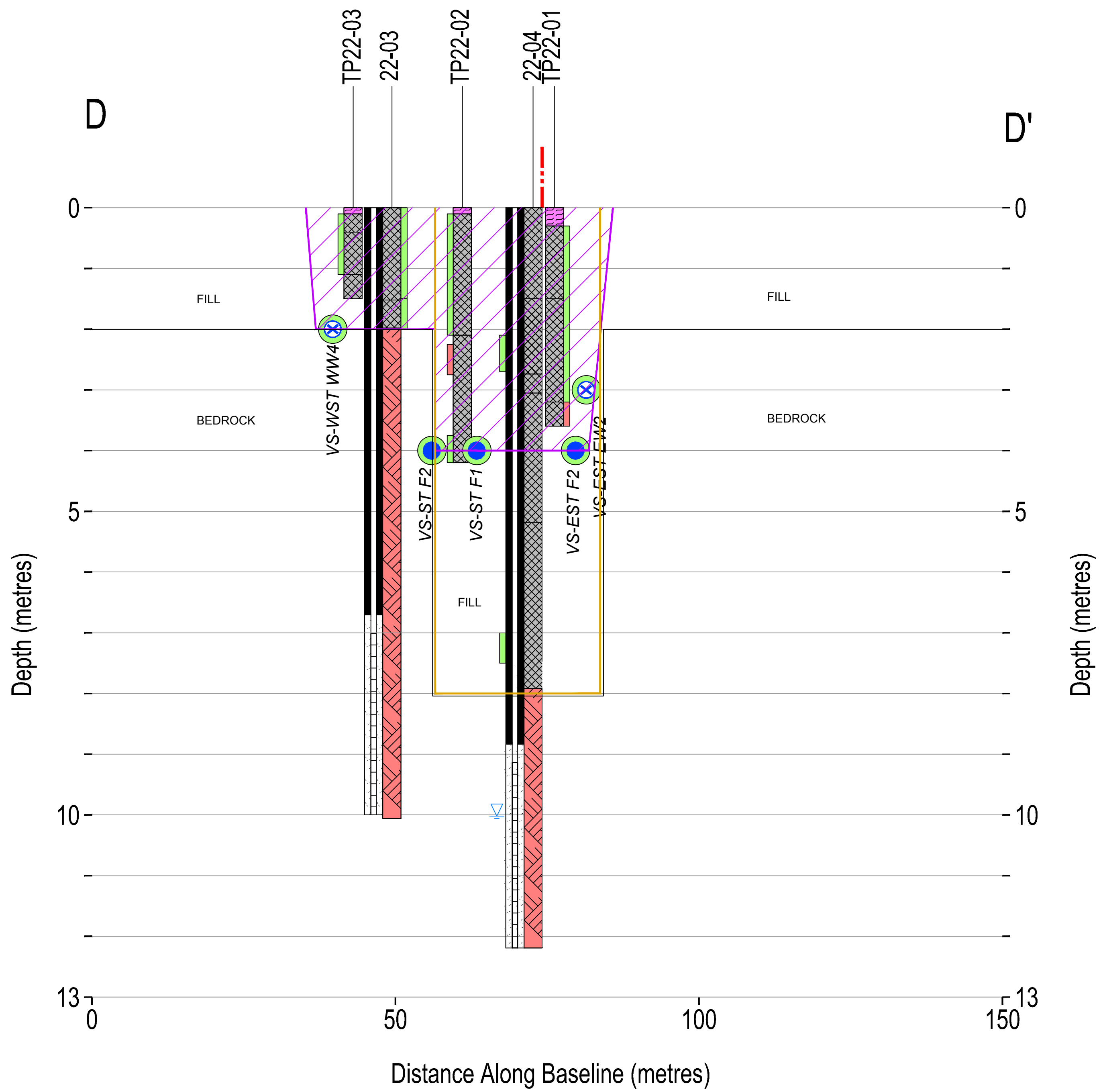
TITLE
CROSS-SECTION D-D' WITH PAH ANALYSIS AND EXCEEDANCES IN THE SEWER TRENCH REMEDIATION

CONSULTANT

wsp

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G3B



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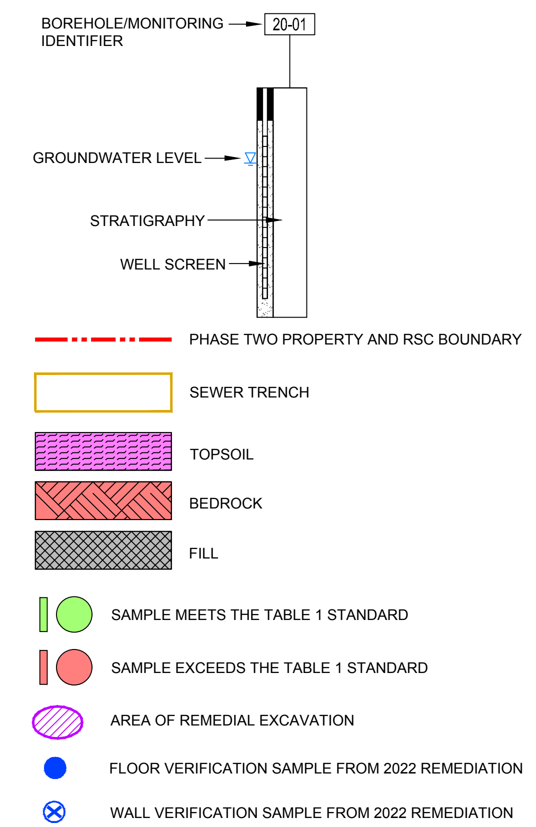


NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

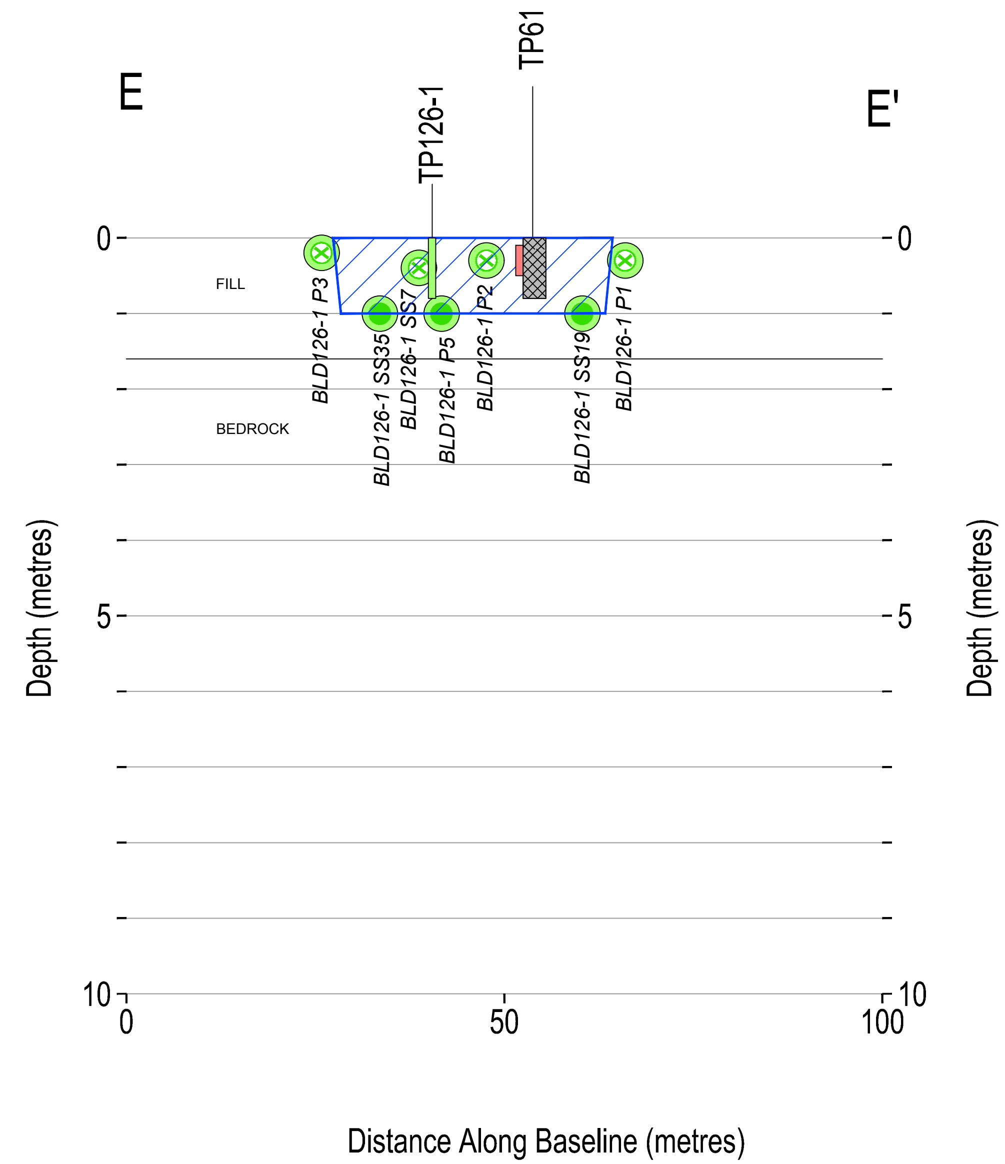
PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 4, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION D-D' WITH PHC ANALYSIS AND EXCEEDANCES IN THE SEWER TRENCH REMEDIATION

CONSULTANT

YYYY-MM-DD	2022-12-22
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G3C



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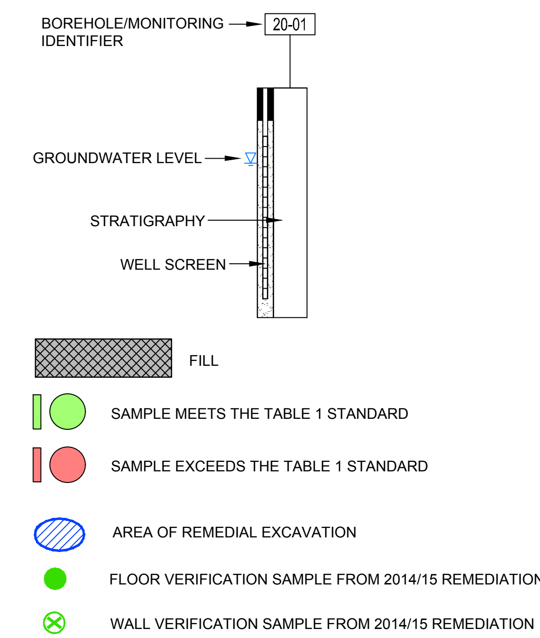

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 6, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION E-E' WITH PHC ANALYSIS AND EXCEEDANCES IN SOIL AT BUILDING 126-1 REMEDIATION

CONSULTANT
wsp

YYYY-MM-DD	2021-12-17
DESIGNED	----
PREPARED	RS
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G4A

25 mm IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: ANSI B

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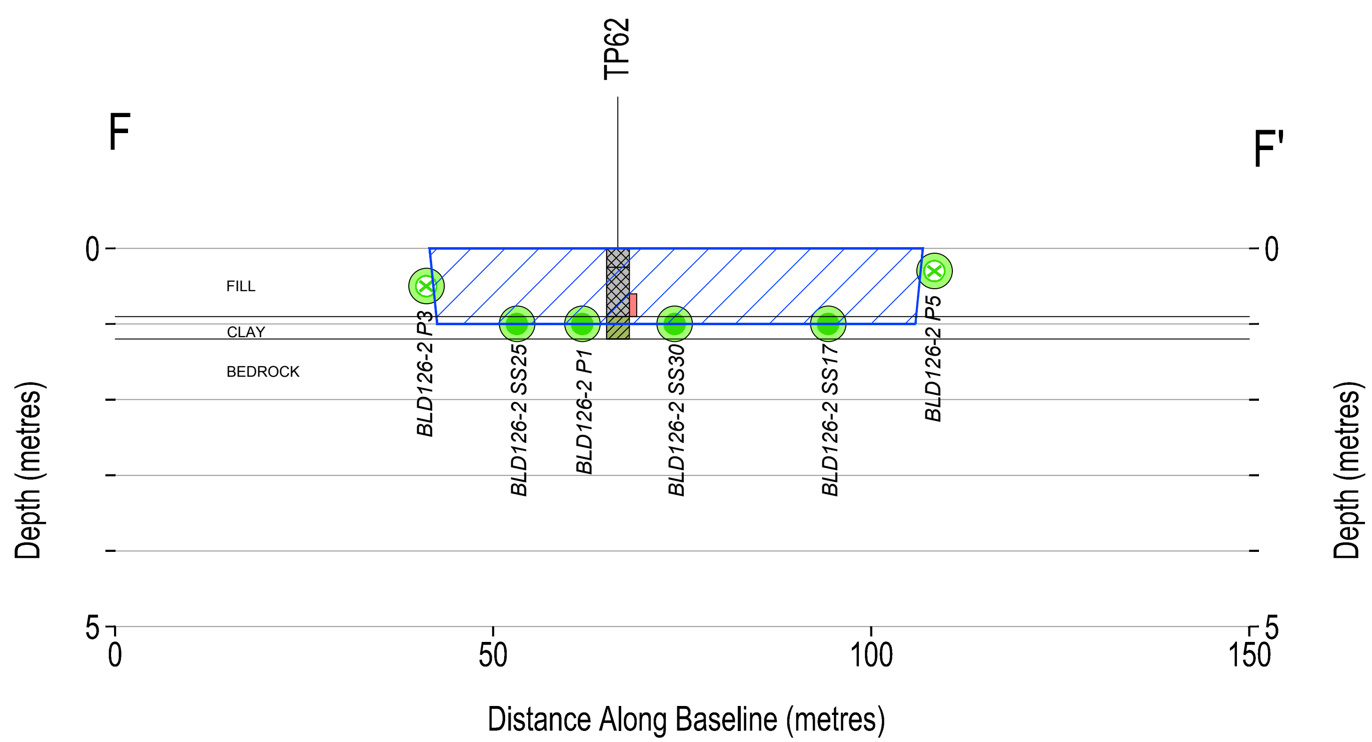

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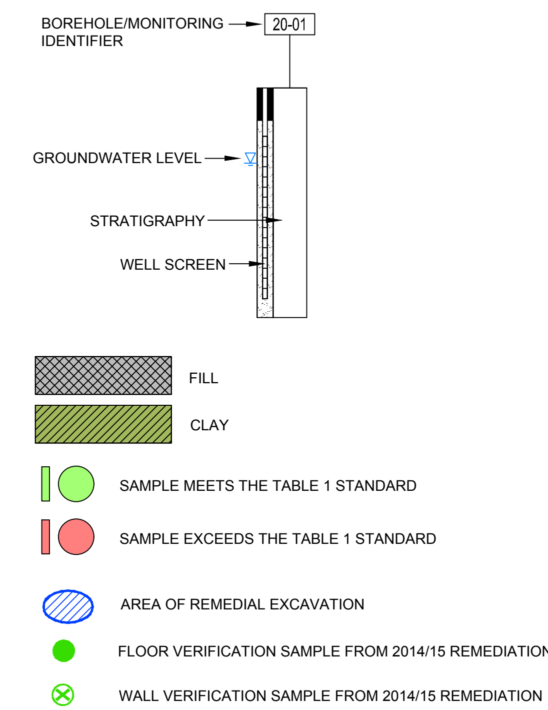


NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 6, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

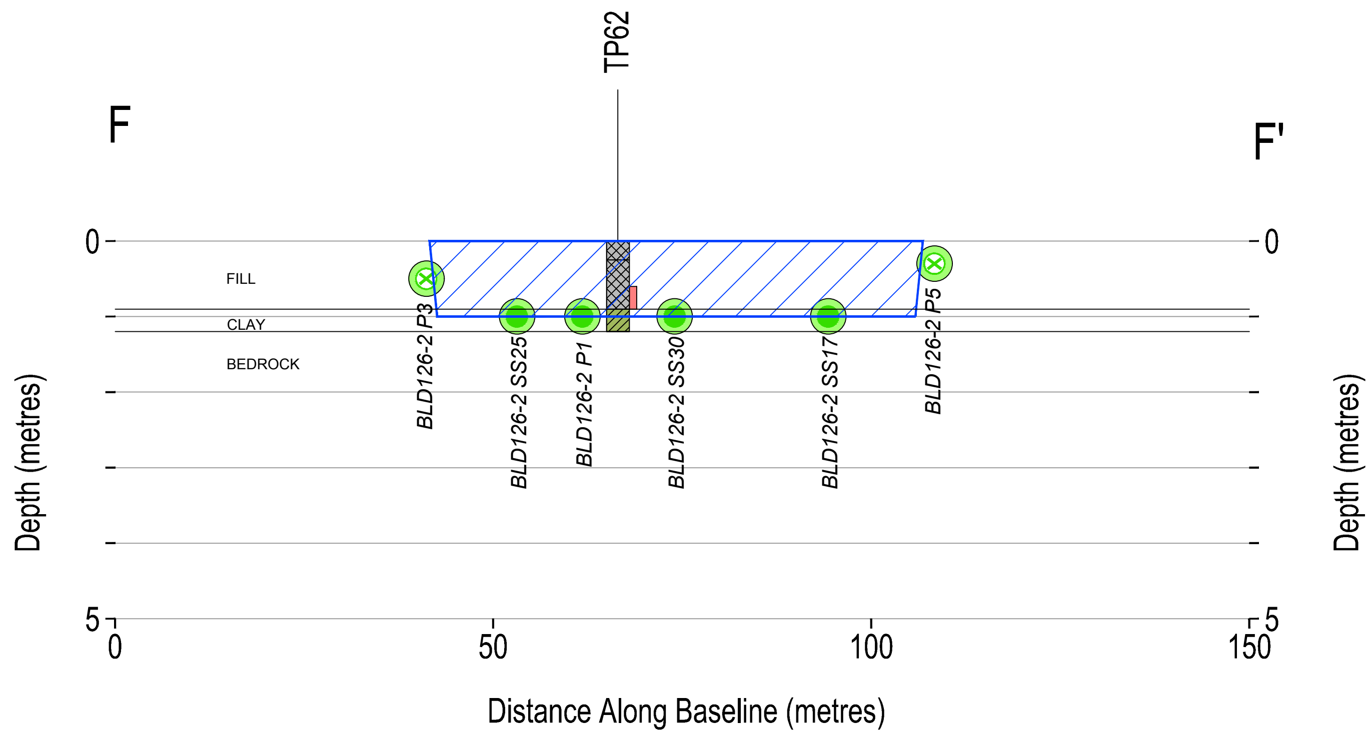
TITLE
CROSS-SECTION F-F' WITH PAH ANALYSIS AND EXCEEDANCES IN SOIL AT BLD 126-2 REMEDIATION

CONSULTANT

wsp

YYYY-MM-DD	2021-12-17
DESIGNED	----
PREPARED	JEM
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G5A



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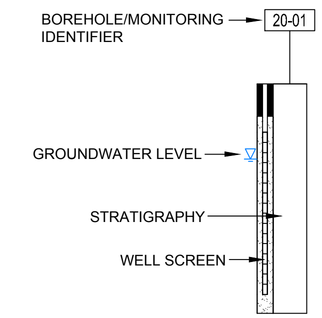

- FILL
- CLAY
- SAMPLE MEETS THE TABLE 1 STANDARD
- SAMPLE EXCEEDS THE TABLE 1 STANDARD
- AREA OF REMEDIAL EXCAVATION
- FLOOR VERIFICATION SAMPLE FROM 2014/15 REMEDIATION
- WALL VERIFICATION SAMPLE FROM 2014/15 REMEDIATION

NOTE(S)

1. ALL LOCATIONS ARE APPROXIMATE.
2. FOR DETAILED STRATIGRAPHY SEE RECORD OF BOREHOLE LOGS.
3. FOR CROSS-SECTION LOCATION SEE FIGURE 2.
4. SAMPLE DEPTH IN METRES BELOW GROUND SURFACE.

0 2.5 5
1:100 VERTICAL METRES

0 25 50
1:1,000 HORIZONTAL METRES

CLIENT
CLC LIMITED

PROJECT
PHASE TWO ENVIRONMENTAL SITE ASSESSMENT, WATERIDGE VILLAGE PHASE 6, PART OF 1076 HEMLOCK PRIVATE, OTTAWA, ONTARIO

TITLE
CROSS-SECTION F-F' WITH PHC ANALYSIS AND EXCEEDANCES IN SOIL AT BLD 126-2 REMEDIATION

CONSULTANT
wsp

YYYY-MM-DD	2021-12-17
DESIGNED	----
PREPARED	JEM
REVIEWED	AW
APPROVED	KPH

PROJECT NO.	CONTROL	REV.	FIGURE
19124906	0015	0	G5B

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